SOUTHERN

Aviation Flight

August, 1944
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Engines bearing the Pratt & Whitney emblem accounted for more than half of the aircraft engine horsepower produced in the United States during 1943.

They were installed in:

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65% of four-engined bombers
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49% of one- and two-engined transports
49% of single-engined fighters

PRATT & WHITNEY AIRCRAFT
EAST HARTFORD, CONNECTICUT
ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

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By The Maker of

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AVIATION DIVISION

THE GENERAL TIRE & RUBBER CO., AKRON, OHIO

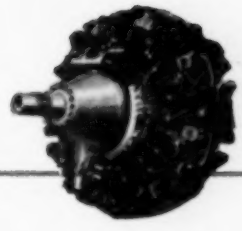
Shipping found a windfall in low-cost luxury travel

The same tremendous market that transatlantic steamship lines discovered 20 years ago is waiting for the introduction of low-cost pleasure travel by air.

In 1924, with immigration reduced to a trickle and the third class quarters of ships running almost empty, one enterprising line modernized these quarters and offered passage to students and teachers at rates 40% to 60% below cabin or first class. Within a few years, this "tourist" traffic equalled the first class business, and by 1937, "tourist" and similar low-rate traffic amounted to 75% of all transatlantic travel.

The mass travel movement which followed World War I can be repeated when air transport rates meet tourist budgets. A world-wide choice of destinations, within quick and comfortable reach during the span of a normal vacation, will attract thousands. More efficient, more economical air transport to make such travel possible is on the way. To the design of new equipment, Wright Cyclones make their contribution in reduced fuel and maintenance costs, with a bonus in payload because of their lighter weight. *Wright Cyclones pay their way.*

Wright Aeronautical Corporation
A Division of Curtiss-Wright Corporation
Paterson, New Jersey, U.S.A.



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The pressure of war has packed the power of thousands of horses into a few cubic feet of metal. And the harnessing of that power to the great bombers that daily are roaring to victory over Berlin and Truk requires master engineering and precision manufacture. The *MOTOR MOUNTS* for some of America's newest and largest bombers are being produced in the completely modern plants of the Guiberson Corporation. Care and precision in manufacture are the heritage of every Guiberson built aircraft part.

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DALLAS : : : : TEXAS

Southern Flight

Eleventh Year of Publication
and Faithful Service to the American Aviation Industry

AUGUST, 1944 VOL. XXII, NO. 2

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The Birdmen's Perch

SEE HOW EASY IT IS?

You send in a Little Known Fact (About Well Known Planes), and if it's red-hot and we use it, you get a commission as a Perch Pilot (bottom rung). Then you send in some more!

After we've used 5 of your "facts," you get a promotion to Senior Perch Pilot. And we guess if anyone ever sends us 20 Little Known Facts that we can use, we'll have to make them a Command Perch Pilot.

We want you gals to send them, too. (Even if you're not a WASP.) Like the "Facts" below we picked up for this month.

Major Al Williams,

alias "Tattered Wing Tips," Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

THESE PERCH COMMISSIONS ARE FREE — BUT IT TAKES WAR BONDS TO PAY FOR REAL COMMISSIONS!

LITTLE KNOWN FACTS DEPT.

The "C-40" is the world's fastest cargo plane, its pilots say. Never heard of it? . . . It's a P-40 with the disposable belly tank rigged to carry cargo instead of fuel. It's carried mail, instruments, and medical supplies in New Guinea; delivered fresh meat in the Aleutians!

A C-46, surprised by Zeros as it flew "The Hump" into China, dived to an indicated 405 mph in escaping!

The Navy's using stripped down 2000 hp Corsairs for scouting missions in one theater!

Okay, now you *write the next ones.*

THIS IS HOW A CORSAIR STRIPS DOWN!

CHILLING, HORROR STORY (in 2 parts)

PART 1.

Ever get the old "hollow-belly" this way:

You look out and see a "skin" of ice building up on the leading edge? As you nervously hunt for a no-ice altitude, you think longingly of the long, beautiful de-icer boots on the big ships? And how they "peel" the rime or glaze right off that sensitive leading edge? And you sigh and wish someone would put out a good five-cent de-icer for light planes, as you continue your search for a no-ice layer?

PART 2.

Now imagine you were in a cylinder. (Oh, come on . . . we'll be out in a minute!)

If you were using an ordinary oil, you'd see a "skin" of oil-carbon and combustion by-products building up on piston rings, lands, and grooves. And you'd see sludge forming . . . sludge that might get into the oil circulating system to clog filters and screens. And you'd wish there was a method to "peel" more of those carbon-and-sludge elements out of the oil.

Unless you knew about the Alchlor Process, which does just that to GULFPRIDE!

Come on out of that cylinder, now, and service up with GULFPRIDE.

Gulf Oil Corporation and Gulf Refining Company...makers of

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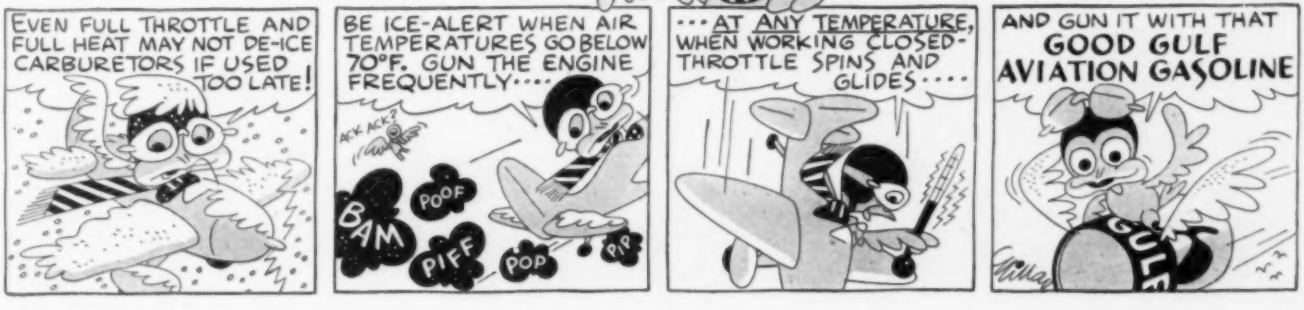
OIL IS AMMUNITION—USE IT WISELY


EVEN FULL THROTTLE AND FULL HEAT MAY NOT DE-ICE CARBURETORS IF USED TOO LATE!
BE ICE-ALERT WHEN AIR TEMPERATURES GO BELOW 70°F. GUN THE ENGINE FREQUENTLY....
ACK ACK!
BAM
POOF
PIFF
POP
RIP
...AT ANY TEMPERATURE, WHEN WORKING CLOSED-THROTTLE SPINS AND GLIDES....
AND GUN IT WITH THAT GOOD GULF AVIATION GASOLINE

JUST AMONG OURSELVES

Editorials and Comment

Two Strong Spokesmen

DON'T miss the significance behind the recent revitalization of aviation's two largest and oldest organizations — the National Aeronautic Association and the Aeronautical Chamber of Commerce. The job in both instances has been accomplished without much fanfare but with great effectiveness. The NAA, as a consumer organization, and the Aero Chamber, as the manufacturers' group, will become increasingly more important as time goes on, especially as official spokesmen for the branches of the industry each organization represents.

The Aero Chamber's reorganized strength was manifest in July during hearings before the subcommittee on war contracts of the Senate Military Affairs Committee, when capable Eugene Wilson, vice chairman of United Aircraft Corporation and chairman of the Chamber's board of governors, together with Convair's Harry Woodhead and Fairchild's Carl Ward, outlined the industry's postwar aims and called for sensible measures for the preservation of American air supremacy through the maintenance of a strong aircraft industry. Their testimony called for a strong postwar air force, acquisition of global air bases for security and trade, expansion of fundamental and specific research, orderly and economic expansion of domestic and international air transport and private flying. Their convincing statements, now on the record, make up a veritable postwar manifesto and reveal complete unity and agreement among the industry's major companies under the Aero Chamber's brilliantly new banner.

Similarly the NAA is pushing forward to new highs in leadership, in scope of program and in action. Under the able direction of newly elected president Bill Enyart (Simmonds Aerocessories) and Lowell Swenson, general manager, NAA's new life and strength is reflected in the great number of new chapters being formed throughout the nation and in the militant spirit of the national office on aviation matters of moment. With renewed faith and confidence, many old-timers in aviation are getting interested all over again. This is a healthy index because so many of these venerable brethren have cussed and condemned the organization for years. They see in the revitalized NAA not only the hope for a strong consumer organization but also an excellent opportunity to bring about some measure of solidarity and unification of non-scheduled civil aviation interests, and above all, a strong, capable spokesman in Washington.

Both the Aero Chamber and the NAA have gone through the wringer. Today they are out of the woods. Sound, intelligent leadership coupled with industry's support, which means healthy membership and cash in the bank, will put any organization on its feet. For the first time in years, both NAA and the Aero Chamber have all these ingredients. They will be especially necessary and valuable to aviation during the transition days ahead.

Resource — Not Wanted

YOU hear a lot of talk these days about the forthcoming cutbacks and contract cancellations without giving much thought to the realization that one branch of aviation already has had most of its contracts cancelled and is going through the throes of painful transition into commercial operations. It's the flight training contractor, both War Training Service and Army Primary, who is no longer needed by Uncle Sam. He has completed his job and has been turned out to find another customer after four years of 100 per cent war work.

The maintenance of his operations, his personnel, equipment, organizations and services is not only vital to national defense, but a tremendously valuable asset to the postwar economy, offering a new, expanded industry potentially capable of absorbing demobilized veterans as well as new postwar flying equipment that should pour forth from our factory assembly lines after reconversion takes place.

Not many people seem to be concerned with the present plight of the fixed-base operator or whether he continues to exist or not. The Civil Pilot Training Act has been extended but without any provision for funds. Defense Plant Corporation is glutting the used plane market with surplus aircraft while the Petroleum Administration for War threatens severe shortages in 73 and 80 octane gasoline, certain to bring about rationing early in the fall. Operators who were hopeful of landing feeder airline or pickup certificates now realize such operations are a long time off in the future.

Most of the Army Contract Schools whose contracts have been cancelled are shut down completely. War Training Service contractors are diligently after what student instruction, charter work, repair work and airplane trading they can pick up, but with conditions as they are, most of them are living largely on hope and expectations for an early end of the European war, which might bring about new opportunities in commercial aviation and relief from many of the necessary wartime restrictions.

It's regrettable that aviation flight and mechanic training courses were not made a permanent part of the curricula of our high schools and colleges on a national basis years ago—not for the purpose of subsidizing flight training operators, but as a national "air conditioning" program to guarantee a steady flow of properly indoctrinated youngsters into the armed forces during war and a nation of airmen contributing to the health and economic wealth of the nation during peace.

America, full of false prophets proclaiming the air age is upon us, dealing in high sounding phrases of air supremacy and hypothetical globalony, is today throwing away one of its richest resources—the civil aviation training facilities and personnel that could rapidly, easily and economically be employed in the training of American youth—the kid down the street, the senior in high school, the freshman in college, who begs and pleads for the chance to sprout wings. But the earth-bound minds of his elders, his statesmen and his educators, decree differently. They talk a good line of aviation but when it comes to building it—that's a different story.

MEMBER

Aeronautical Training Society

Five years ago a group of civilian flying schools undertook the task of teaching Army Aviation Cadets to fly. International war clouds threatened this country. Our air force was inadequate. Time was too short for usual methods.

The Army called upon civilian schools to help. At first there were nine. As war became certain more schools joined until they were training not only American, but British, French, Dutch and Chinese pilots.

Since 1939, all pilots of the Army Air Forces have been taught to fly in civilian-operated primary schools under Army supervision. Aeronautical Training Society (ATS) is the liaison organization for these schools.

Southeastern Air Service, in two primary schools, has taught thousands of pilots. With graduates from other ATS schools, they are fighting on all air battlefronts.

Southeastern is proud indeed to be a member of the Aeronautical Training Society.

SOUTHEASTERN AIR SERVICE, INC.

Formerly GEORGIA AIR SERVICE, INC.

Flight Contractors to U. S. Army Air Forces — Bennettsville, S. C. and Jackson, Tenn.

EXECUTIVE OFFICES — ATLANTA, GEORGIA

Revving Up

FLYING FARMERS: State Agricultural Extension Editor H. A. Graham of Oklahoma tells us the Sooner State leads the nation in the number of farmers, in proportion to its farm population, who fly their own planes. Over thirty Oklahoma farmers use planes regularly in their work, which means checking crop and livestock conditions, flood damage, sending after equipment and replacement parts, making long business trips, and hunting coyotes and wolves which menace stock. Fourteen of the farmer flyers were expected to pilot their wives to the annual State Home Demonstration Council meeting at Oklahoma A. & M. College at Stillwater, August 1-3.

★ ★ ★

LONG-NOSED FUSELAGE features Consolidated Vultee's Model 39, a 48-passenger, 56,000-pound airliner powered by four 1,100-hp. Pratt & Whitneys. Here's first flight photo of the plane.

—(Convair Photo.)

★ ★ ★

TECHNICAL BULLETINS FROM CAA: Answers to a wide variety of aviation questions are available to pilots, airport and school operators, and all others interested in aviation, as a result of a technical information section established recently by the Aircraft Section of the General Inspection Division of the CAA in each of its seventy-nine district offices. The service, described by CAA as a logical parallel of its proposal that private aircraft owners be allowed to do routine maintenance and repair work on their planes, consists of a complete library of necessary information on aircraft of all types, engines and instruments. Bulletins, usually those written by manufacturers, are available covering maintenance, repair and servicing of products, and as revisions are made, files will be altered.

★ ★ ★

OUT ON A LIMB: Only twelve planes of the Douglas DC-7 type, carrying seventy-six passengers each, will handle all the trans-Atlantic air traffic in 1950, and only twenty-four can take care of the job in 1955. So said L. F. Hampel, United Airlines economist, the other day, while his boss, W. A. Patterson, told the CAB that the potential volume of trans-Atlantic traffic will be insufficient to support more than one U. S. airline—a jointly financed and operated one.

★ ★ ★

A REMINDER: Rationing of 73 and 80 aviation gasolines is due around September 1. As reported last month, the CAA will administer the rationing in spite of OPA protests. Meanwhile the Petroleum Administration for War, citing that military requirements of all petroleum products are increasing more rapidly than expected, called on refiners to push to the limit the production of 80 and 73 octane fuels. It was pointed out that 80 octane all-purpose gas is the fuel that powers motorized guns, armored cars, jeeps and similar vehicles. All this points to the possibility of critical shortages before winter. What many airmen can't understand is the big push to dump surplus military and WTS ships on the commercial market even though it means increased consumption of the above named fuels.

★ ★ ★

D DAY IN A GLIDER: Of all the descriptions of D Day, none surpassed a letter we received from a friend who piloted a glider into a French cow pasture and suffered major injuries. From his inspiring note we give you the following: "As fate would have it we missed our proper landing area (learned later that the Germans had expected us and had mounted 88's and machine guns on the corners). It was every man for himself. There was so much wild lead from AA and machine guns coming at us that we could actually see it. It's a mean sight to look down and see a machine gun winking at you and when they hit you on these wooden swooses it sounds like pulling a stick along a picket fence. The fields were about 400 to 600 feet long and had trees fifty to seventy-five feet high on the borders. At about 700 feet altitude I decided it might be a good place to start in with about two 90-degree turns. Found me a field full of cows. Base leg o. k. Final approach o. k. Level off at 400 feet, kill speed, drop flaps to full, nose down and here we go—110 to 120 mph.—no flaps. No flaps! Well, there were some flaps but they wouldn't go down—no pressure. Some shrap had cut the line. I pulled up into a stall, eased it out and into another one. Now I ask you, isn't that a hell of a position for a grown man, presumably intelligent, to be in? I would have sold out for a used beer can. Ten tons of anti-tank gun, Jeep, TNT, Bazooka ammunition, grenades, incendiary grenades and my chow and men. Finally got it in and applied the brakes with great vigor. No brakes. Picked out two trees and they filled the bill for the brakes. I slid out of my seat as there was plenty of grease there and on through the front end. A paratrooper said I did a forward flip through the air and landed on my feet. From then on is confusion. A German battery of 88's was firing a few hundred yards away, machine gun pistols and machine guns were going off everywhere so I emulated our worthy cousin, the mole. Got out the next night. I now have distinguished iron gray temples and have been in this sack at the general hospital since. When I get well I'll be back in there somewhere and give 'em some hell if I can get one of those damn crash blimps down without knocking myself out."

★ ★ ★

STRAPS AND COMPARTMENTS accommodate up to 8,826 pounds of useful load in American Airlines' converted DC-3 Skyfreighters. Shipments 26x36x72 inches, or tubular items up to 12 feet long, are accepted. This interior scene shows orderly interior of one of the all-freight planes.

—(American Airlines Photo.)

SUPPLIES AT THE FRONT in New Guinea have been flown in almost before the dust and smoke of battle dies away. Here's a Douglas C-47 landing on Hollandia's Cyclops airdrome shortly after it fell to the Americans. Note wreckage of Jap Zero blasted by preparatory bombings

—(Douglas Photo.)

THAT OUR COUNTRY MIGHT *Out-Devise* THE ENEMY

Small example of a BIG PROGRAM inaugurated at the outset of war

By developing an ammunition box of phenolic cloth laminate to replace one of stainless steel, Curtiss engineers simultaneously accomplished a saving of critical metal, economy of weight and a reduction in cost. Three important advantages accruing from the change of a single part!

When the war started, Curtiss-Wright instituted its own program of strategic material savings. Today many of the then critical materials are no longer on the list, but the program has been broadened to include the whole field of material research.

Lighter, stronger materials have been developed and many more are on the horizon. Not only will they increase the speed and effectiveness of our fighting aircraft but, in days to come, will make possible greater payloads for the Curtiss Transports that will fly the skies of Peace. Curtiss-Wright Corporation, Airplane Division, Buffalo, Columbus, St. Louis, Louisville.

Another Contribution of

Curtiss-Wright

Toward Winning This War

Member, Aircraft War Production Council, East Coast, Inc.

GI's ... by proxy

Whether it's forty degrees below zero in Alaska or one hundred and seventy in the sun at Iran, the technical representatives of Bell Aircraft's field service staff help keep thousands of Airacobras flying... and fighting in the far corners of the world.

The first technical mission sent to Russia by an American manufacturer consisted of Bell Aircraft servicemen and engineers. These men gave valuable technical information to the Red Air Force to assist their engineering officers and ground crews in servicing and maintaining the thousands of Bell fighter planes on the Eastern front. In return they brought back first hand knowledge of Airacobras in action which has aided us in producing even more effective air weapons.

Theirs is a dangerous life. They are civilian G I's who play an important part in helping the Army Air Forces and our Allies to keep 'em flying. Here in America, they serve nine commands of the Army Air Forces—living a soldier's life on the California desert or in the swamps of Florida—in order to learn how to work under actual war conditions.

Some of these Bell Servicemen are now studying the new powerful fighter plane coming from our Niagara Frontier Division. Some are giving their entire attention to the flexible machine gun mounts made by the Bell Ordnance Division. Others are taking a special course on America's first jet propelled plane designed and built by Bell Aircraft —as spectacular in its way as the B-29 Super-fortresses of which Bell Aircraft is one of the producers in its bomber plant at Marietta, Ga.

And when the new Bell helicopter becomes available for general use, the service department will add this latest Bell Aircraft development to its activities. © Bell Aircraft Corporation.

MEMBER AIRCRAFT WAR PRODUCTION COUNCIL—EAST COAST, INC.

BELL *Aircraft*

PACEMAKER OF AVIATION PROGRESS

Niagara Frontier Division, Buffalo and Niagara Falls, N. Y.—Ordnance Division, Burlington, Vt.—Georgia Division, Marietta, Ga.

BUY WAR BONDS AND SPEED VICTORY

Buy War Bonds – to Have and to Hold

Bee-lines to Berlin

A straight line—really *straight*—is one of the hardest things in the world to draw. Yet thousands of mathematically straight lines are necessary to the building of a big airplane like the Boeing Flying Fortress and the B-29 Superfortress.

The master layout drawings for every part of a bomber must be made on flat sheets of lacquered steel. To insure the accuracy of the finished drawing, the metal is first scribed with intersecting reference lines like those on a gigantic sheet of graph paper. And the lines must cross each other in perfect 10-inch squares, without deviating as much as 1/100th of an inch.

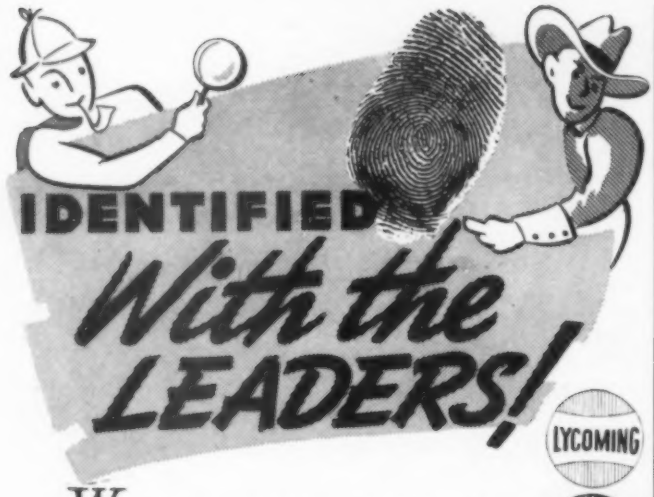
Until recently this was a slow and laborious job. Draftsmen sprawled across the big tables hour after hour, ruling in reference lines with straight-edges. But the slightest miscalculation – even the expansion of metal caused by the sun's heat – might ruin their efforts. Drawing the grid lines on master layouts for the frames and bulkheads of one model alone consumed 5600 hours.

Boeing engineers determined to change the method. They built the "Grid Machine" shown above—a simple, supremely accurate device that draws a dozen parallel straight lines while you watch. It never makes a mistake. And it has already saved thousands of priceless hours between blueprint and bombing mission. Today the work is done in *less than a tenth* of the former time.

All through the Boeing plants are similar examples of ingenuity and skill applied to the task of building *more* airplanes *faster* and *more economically* – speeding the production that shortens the distance to Victory.

When the war is won, Boeing's abilities in design, engineering and manufacturing will again be applied to peacetime products. You can be sure of any such product . . . if it's "Built by Boeing" it's bound to be good.

DESIGNERS OF THE FLYING FORTRESS • THE NEW B-29 SUPERFORTRESS • THE STRATOLINER • TRANSOCEAN CLIPPERS **BOEING**



When it comes to parts, Pardner we've got 'em in this corral. From propeller to tail wheel they're the best, built by folks who are the Leaders in Aviation.

The men in this organization KNOW airplanes—have been flying 'em, designing and selling 'em for over twenty years . . . "KEEP-IN' 'EM FLYIN' "—is OUR business! Here, you will find it's as easy to fly in for the work you need, as driving your car into your service station or garage for service. Complete stocks of Radios . . Instruments . . Accessories, including Flying Jackets, Manuals, Plotters, Maps, etc.

Complete facilities and equipment for inspection, minor repair or complete tear-down, rebuilding and refinishing of aircraft. An Aircraft Sales finished job is the "slickest" plane in the air.

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With the coming of peace, as in the past—we will be handling the sales of the airplanes that WILL BRING A NEW MEANING TO FLYING.

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AIRCRAFT SALES CO.

MEACHAM FIELD FORT WORTH, TEXAS

AIR REPORT

☆ SIGNIFICANT TRENDS IN THE NEWS

Hog-Tied and Hobbled

The War Production Board is getting a stronger strangle-hold on civil aviation. New regulations contained in a revised version of Limitation Order L-48 entitled "Civilian Aircraft", released in mid-July, govern the production and sale of airplanes, aircraft products and training devices for essential civilian use. Here are some of the new features:

Extends provisions of Order L-48 to cover engines, propellers, gliders, airframes and training devices that were not controlled previously; forbids the manufacture of any aircraft and aircraft products, unless authorized in the manner provided in the order (if demand for aircraft and products is directly related to military needs or to fill an essential need); forbids the transfer of new aircraft or other aircraft products or those which have had less than 100 hours flying time; forbids the transfer of new training devices or those that have been in operational use for less than six months. It is highly interesting to note that the last two items apply only to planes and aircraft products previously manufactured for civilian use, **not to aircraft and aircraft products sold as supplies through the Surplus War Property Administration.**

Commenting on the new order, the Aircraft Production Board pointed out that the revised regulations will not permit any immediate expansion of civilian production by the aircraft industry, since the APB will maintain complete control over each civilian request for aircraft and aircraft products, and will grant a manufacturer permission to fill each specific order only after the essential nature of the need has been determined.

The provision of the order that requires permission to dispose of almost new planes, training devices and aircraft products is intended to prevent unnecessary use of machinery and manpower to produce new equipment so long as adequate (government owned surplus?) second-hand equipment is available, APB said.

A civilian now desiring to buy a new airplane or propeller or engine or any such products will file a request on WPB Form 1319 in Washington. The form will be processed by the Aircraft Priorities Branch of the Aircraft Production Board. If proved essential, the purchaser will be authorized to file his approved order with the manufacturer. The manufacturer in turn will be required to file with WPB on Controlled Materials Plan Form 4-B, to obtain permission to fill the order. Previously, only certain categories of purchasers, such as operators of Civil Air Patrol planes or CAA-WTS schools, could undertake to obtain aircraft or aircraft products from manufacturers—and then only after Joint Aircraft Committee approval.

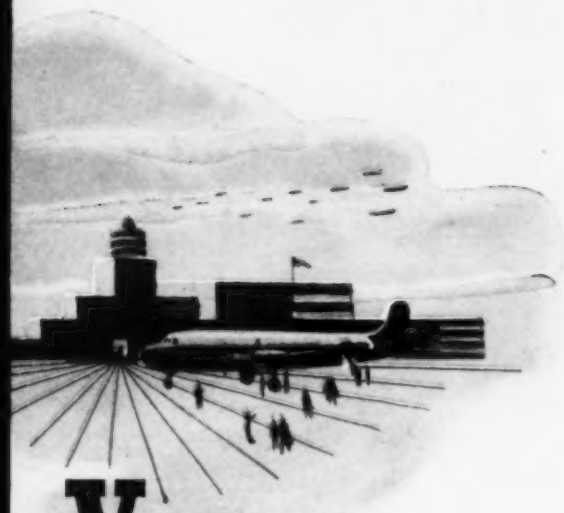
The new version of L-48 recognizes the principle that, under Order P-43, aircraft manufacturers may develop prototypes of new planes, provided that manpower and facilities are not diverted from war work, that no L or M orders are thereby violated, **and that no publicity is given to the prototypes.** (Boldface ours!)

★ ★ ★

Air Rights for Oil

In a recent deal with Franco's Spain, the State Department employed international aviation as a bargaining agent. In return for oil, Franco's government will concede the right of entry for our air transport services and also cut shipments of wolfram to the Reich. Some observers construe this action as an index to the methods that will be employed in gaining landing rights abroad, bemoaning the fact that aviation will be used for barter purposes. Whether the CAB will issue an operating permit to an American operator for

(Continued on page 14)



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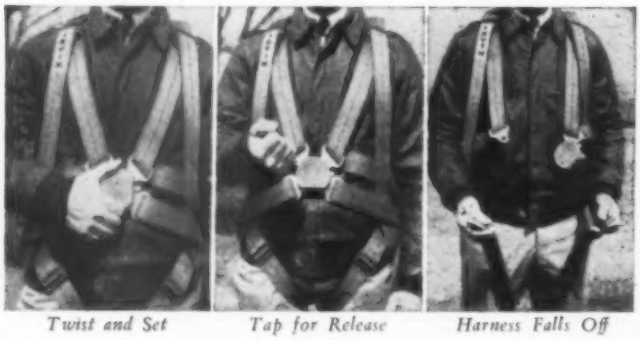

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Factories at other points in the United States, Canada and England . . . All Serving the United Nations' Air Forces.

AIR REPORT

(Continued from page 12)

service to oil-hungry Spain before the end of the European war is problematical and of not much import. What is significant about the deal is the established precedent of bilateral reciprocity in our soon-to-be expanded international air transport systems.

★ ★ ★

Miss Cochran Is Persistent

Far from being a closed chapter, the WASP controversy still boils. Latest developments are these: WASP pilots are still being sent to Officers' Candidate School in Orlando, Florida, prior to being commissioned as AAF officers; new AAF-Cochran tack since defeat of the Costello Bill is to have the War Department order the WASPS into the WAC (relaxing age and other requirements), next step ordering them out of the WAC and into a separate auxiliary women's air force, thereby circumventing congressional sanction or jurisdiction; Jacqueline Cochran is making a flying trip around the country, talking the plan up, in what the **Detroit Free Press** calls a "crusade to reinstate the WASP."

In spite of AAF propaganda that civilian pilots recently released by CAA-WTS programs are being taken into the service, thousands of male pilots are walking the streets as civilians or in the foot army. There are so many pilots in the Air Forces that many officers find it difficult to get enough flying time each month to warrant flight pay.

Nub of the whole situation is this: the small clique of AAF officers and Miss Cochran, smarting under the recent rebuff by Congress in defeating the Costello Bill, hope to find other ways that will perpetuate their WASP program of 5,000 army-trained women flyers at a cost of $100,000,000, in spite of the fact that male pilots are a dime a dozen.

★ ★ ★

Short Hops Are High Hurdle for Feeders

Next time you see somebody's proposal for feeder airline operations, look twice at their promise of passenger or other stop service for towns and hamlets every twenty or thirty or even fifty miles apart. There are some catches—some real headaches—involved. Jerry Lederer, Chief Engineer of Aero Insurance Underwriters' engineering department, reminds us of a few of the problems, to-wit: "According to one study, a feeder line airplane will average only 60 mph with fifty-mile stops and five minutes per stop. . . . Time on the ground must be reduced to a minimum. Why not strive for a one-minute stop as our objective? Subway trains in New York average seventeen seconds per stop. . . . It may mean: No circling prior to landing (requiring topnotch traffic control); a minimum of taxiing after the landing roll (passengers brought to the runway in a bus or trailer—embark and disembark on the side of the runway; no ramps); runways will have to be long enough to allow take-off without requiring the ship to taxi back; a system of light signals on the runways to signal for take-off (reduce radio conversation); engines will be kept running, time to stop and start engines will not be available (requiring reversible pitch propellers or pusher airplanes so passengers won't be compelled to pass through the slipstream); refueling with engines running may be necessary; large doors will be required (so two people can use them simultaneously); separate cargo bins for each stop; an enormous weather data board on top of the administration building that the pilot can see from the runway; and this is only the beginning. . . . It will be interesting to watch this development; we know it will succeed, but the price of progress is trouble."

★ ★ ★

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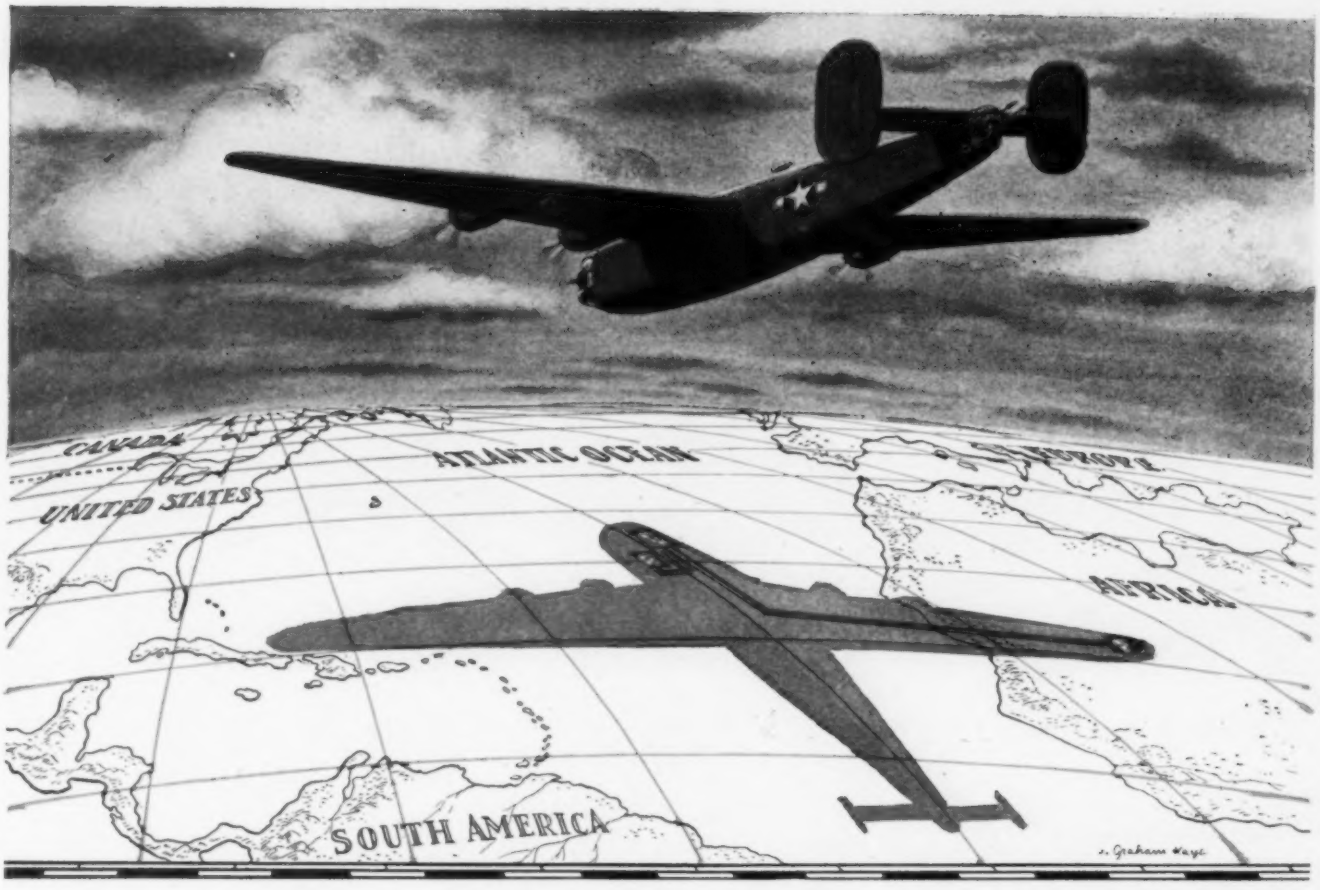

Sperry Gyrosyn Compass

The Directional Gyro with Magnetic "Sense"

See diagram on shadow of airplane above.

G — GYROSYN COMPASS — installed on pilot's instrument panel or at navigator's station.

R — REPEATER—for remote indication. Up to six may be used.

F — FLUX VALVE—mounted in wing tip. Weighs 20 ounces.

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THE Sperry GYROSYN Compass is a directional gyro *synchronized* with the earth's magnetic field.

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The GYROSYN Compass is an electrically driven directional gyro precisely controlled by a Flux Valve to indicate magnetic heading directly or through Repeaters.

The Flux Valve is a device for detecting the direction of the earth's magnetic field. Its design provides light weight, hermetic sealing, and small size for rigid mounting in the wing tip. It has no rotating parts.

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Large-calibre rocket guns have made U. S. warplanes more deadly than ever. Proved effective by P-47's, P-51's and P-40's, they're being adapted to bombers.

One of the heaviest hitting U. S. warplanes is Republic's P-47 Thunderbolt, shown here at Wright Field with rocket gun tubes mounted beneath the wings. Four-and-one-half-inch rockets are fired from these paper plastic tubes in train or individually by an electric trigger. —(AAF Materiel Command Photos.)

Aircraft Rocket Guns

By CECILIA STEVENSON

TWO months ago Army Air Forces communiques from the China-Burma-India (CBI) theater began making brief mention of rocket-firing fighter planes. Now for the first time details of our newest "flying artillery" have been released by the Materiel Command's armament laboratory at Wright Field.

You might call it our "flying HEAVY artillery"—because a P-47 Thunderbolt, with eight .50-caliber wing guns and six rockets has the firepower of six tank busters and the damage done by one of the rockets alone is approximately equal to that of a 105 millimeter cannon.

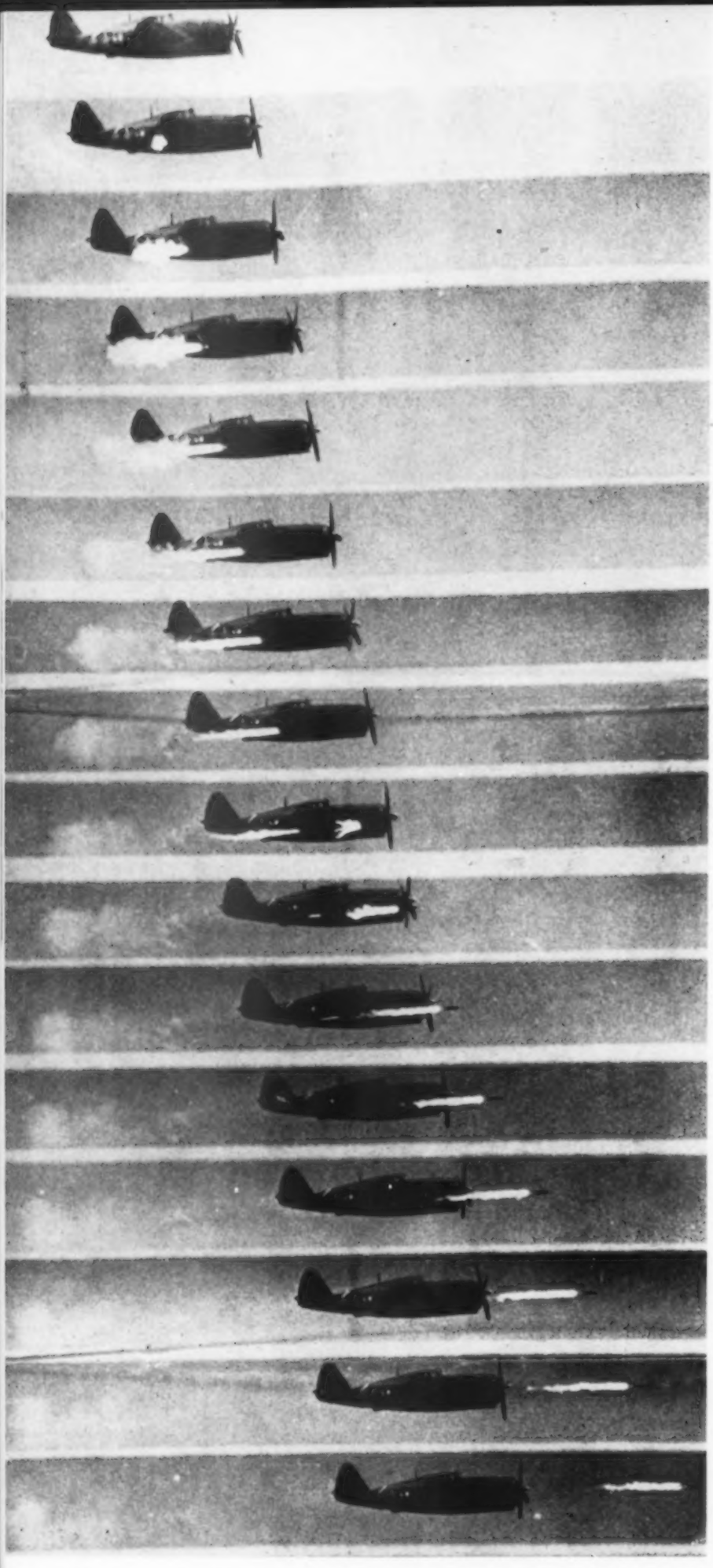
Installed on Thunderbolts, P-51 Mustangs, P-39 Airacobras and P-40 Warhawks, rockets are used in air-to-ground operations exclusively—smashing ships, warehouses, supply depots, ammunition dumps, landing barges and just about anything else the pilot can get in his sights. And besides its terrific explosive effect, a rocket is a good incendiary — its gaseous flames and hot ashes setting fire to anything that's inflammable.

Shells Compared with 105-mm.

Work on AAF rockets began a little over two years ago in one of those hurry-up jobs handed to the AAF since the war began. The *Luftwaffe* had a ten-year head start but in a stepped-up emergency program our experts have developed an offensive air weapon that promises to outclass anything similar the enemy can throw at us.

If they're as effective as military observers say, rockets are an armament man's dream come true. Their operation is simple and there is no recoil to slow the plane since the projectiles use their own motive power and are almost independent of the flight of the aircraft. This means that more aerial explosives can be fired via rockets than by any other method. Just imagine the recoil of one—to say nothing of six—105 millimeter cannon mounted in the nose or wings of any of today's planes.

The pilot fires the six rockets — mounted in clusters of three under each wing, just as he does his .50-caliber wing machine guns. He merely fixes the target in his gun sights—



the same one he uses to aim his fifties —and presses a button or trigger on the stick. A small fire control box in the cockpit enables the pilot to fire the rockets "in train" — leaving their mounts at intervals of one-tenth of a second — or individually.

The rocket itself ranges from four to five and one-half inches in diameter, is approximately a yard long and compares in size to the 105 mm. shell. It has three main sections — the fuse, head and motor.

Powder Produces Jet Thrust

The charge is set off by the fuse upon impact with the target and may also be timed to explode a certain distance from the airplane. That's the method the Germans use when they're after our bomber formations.

The destructive force is carried in the rocket shell's head. Directly behind this powder head is the motor shell, filled with powder propellant, which, when ignited, shoots gasses at a high velocity out of the tapered end of the motor case. This propulsion force thrusts the rocket through the air.

Six fins, are attached to the tapered end, and hinged so that they fold into the rocket tube. When the rocket is fired the fins fan out to help guide and stabilize it in flight.

The combined weight of the entire rocket installation, which, incidentally, is arranged so that droppable bombs and fuel tanks can also be carried, is only about 450 pounds, while a 105 mm. howitzer and six shells totals two tons.

The projectile leaves its rack at exactly the same speed the plane is flying — or zero relative velocity. Almost at that very instant the powder in the motor is ignited. From there on jet propulsion takes the missile on its way at a tremendous speed and the shell quickly outdistances the plane.

The powder propellant actually burns only a fraction of a second. The jet force produced brings the projectile to its maximum speed in about a second and carries it on to the target. The hotter the motor case, the faster the powder burns but if this takes place too rapidly, maximum effectiveness is lost. Armament men are seeking to control this factor.

Rocket guns in action are shown by this series of remarkable high-speed photos. Time interval between firing (top) and projectile's emergence is infinitesimal. Note fiery tail and speed of missile as compared with exhaust puffs behind wing. The propeller was feathered for these shots.

—(AAF Materiel Command Photos.)

Several different types of mountings are used to hold the rockets under the wings. The AAF is currently using paper plastic tubes, which guide the flight path of the rocket to a certain extent. These have a side-wall thickness of about one-fourth-inch and are one-third as heavy as the steel tubes previously used. They may be jettisoned before or after firing to reduce the plane's weight. Paper plastic was adopted because it's lighter and less expensive than steel. The British have been using a rail which provides a track to guide the projectile's flight path.

Bomber Installations Studied

To do ten years' work in two meant a lot of accelerated research. Lt. Col. H. L. Donicht of Wright Field's armament lab fired the first airborne American-designed rocket projectile from a P-40 at the Aberdeen proving grounds in Maryland in July, 1942. The projectiles were fired from thick steel tubes and were the first step in what was supposed to develop into air-to-air firing techniques, similar to that practiced fairly effectively by the Germans.

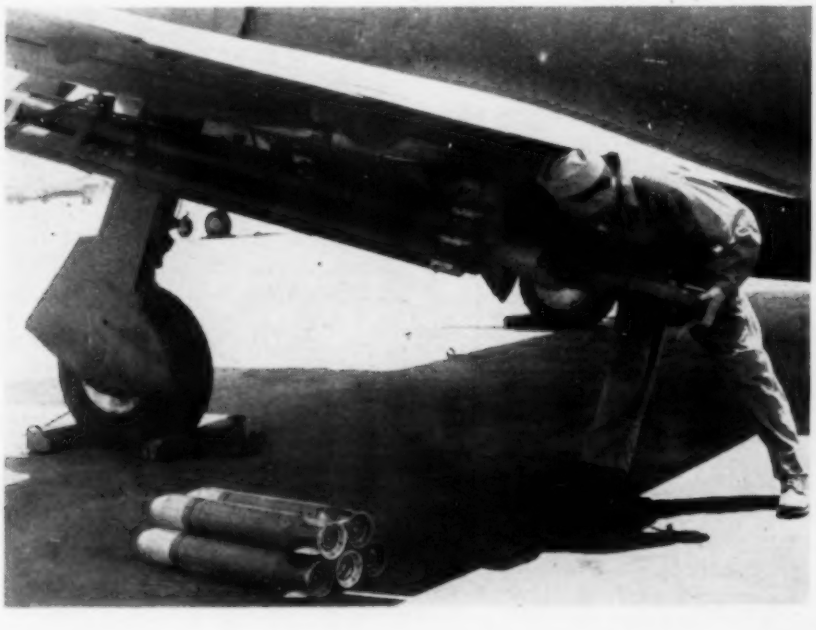
But with the current tactical developments in our air war, we've found we don't need air-to-air rocket weapons, so ours, which are definitely an outgrowth of the famous Bazooka gun, have been designed principally for air-to-ground work.

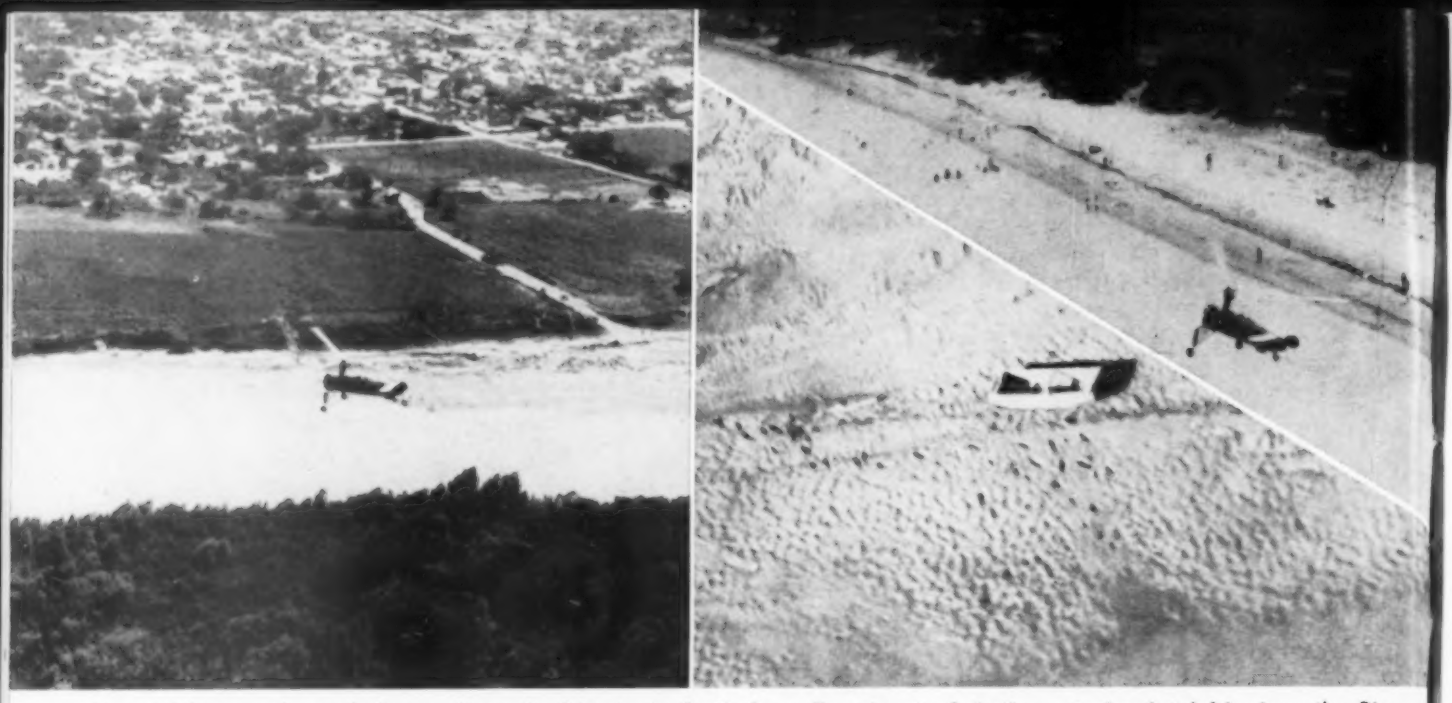
—(AAF Materiel Command Photo.)
Aircraft rocket shell, as this comparison shows, is considerably larger than 75-mm artillery shell (at right) carried by cannon-firing B-25 bombers. Rocket's 4½-inch diameter compares with 75's diameter of about 3 inches. However, accuracy at distance is much greater with artillery fire than with rocket shells.

Aircraft cannon are more accurate, it's true—but rockets have proven in battle that they are one of our most effective air weapons.

Colonel Donicht has predicted that some day we may see rockets hurling projectiles as big as those fired from battleships. In the meantime armament lab experts are improving what they've already got, and are experimenting with rocket installations on medium bombers. ★ ★ ★

—(AAF Materiel Command Photos.)
DETAILS OF INSTALLATION AND SHELLS are contained in these photos. At top can be seen three rockets without fuse caps. Note length (about 3 feet) and six tail fins on each missile. Cluster of tubes beneath wing protrudes considerably from wing. Aiming for rockets is same as for P-47's eight .50-cal. machine guns. Entire installation weighs only 450 pounds. Bottom photo shows technician loading rockets in firing tubes. Fins can be seen folded neatly into base of rocket. British aircraft fire rockets from guide rails mounted beneath wing. Aircraft rocket guns are used by the Luftwaffe for air-to-air combat against Allied bombers, and some German fighters are armed with 8-inch rocket shells. The U. S. Navy is using rocket guns on Grumman TBF torpedo bombers, having reported success with them in anti-submarine warfare. U. S. Army fighters in the Southwest Pacific obliterated a fleet of two-score Jap troop barges in the first employment of aircraft rocket guns in that theatre.





On patrol for smugglers and aliens seeking unlawful entry to the U. S., a Department of Justice autogiro (at left) views the Rio Grande with Reynosa, Mexico, in the background. Its slow flight at low altitude affords a close-up view (center) of a boat hastily beached by smugglers whose clearly-visible footprints show the pilot where to find them. At upper right the 'giro hovers above a group of native bathers. —(U. S. Border Patrol Photos by Kelly S. Neal.)

AUTOGIRO ON PATROL

By TOM ASHLEY

OF MANY ways in which the airplane's utility has been put to work, one of the least known turns out to be one of the most interesting—use of the autogiro along the Mexican border in combating smuggling and the illegal entry of aliens into the United States. Almost daily a Kellett windmills its way over and along hundreds of miles of the snaky Rio Grande which traces the international boundary from the hill country of the west to the Gulf of Mexico at Brownsville.

Where the old Aviation Section of the Signal Corps sprouted the Army Air Forces' pin feathers in Wright and Curtiss biplanes and other early military models long ago in the border country, today's flying agents of the Border Patrol are setting part of the pattern for tomorrow's employment of rotary wing aircraft. Just as the folks of the sparsely settled border became acquainted with and respected the airplane long before many U. S. urbanites ever saw a flying machine, so they are today familiar with the swish of rotary wings long before autogiros and helicopters become adapted to the everyday lives of the masses. And just as surely as ever, the goings-on along the Rio Grande will wield a profound influence on tomorrow's air activity.

But that isn't what interests the Border Patrol as it hops, skips and jumps along the Rio Grande with its autogiro. Ned Henderson, a young Border Patrolman who figured how he could do a better job in the air than on the ground and then saved enough spending money to learn to fly, isn't as interested in what the city folks might derive from his pioneering as he is in the job at hand. Catching "wetbacks," and how to warp that 'giro in and out of brush and sandbars—those are the chief interests of the man whose flying has become a real contribution in the perfection of rotary wing craft.

After he learned to fly in 1931, Ned naturally charted his first hops along the river. He was familiar with every crook and turn of the border after years of walking, riding horseback, and driving autos as a Patrolman. Sure enough, the airplane showed him things he'd never seen—chiefly footprints made by "wetbacks" as they stole down the river banks on the Mexican side and up the sandy shores of the U. S. side. He managed to check on his patrol beat every Sunday and sometimes during the week, renting airplanes with his own funds and flying them on his own time. His "catches" began to show the results of his kind of aerial double-checking, and whenever he had the opportunity Ned made a point of talking airplanes to superiors. Fletcher L. Rawls, Chief, McAllen Border Patrol Sector, and Hubert P. Brady, Chief, District Alien Control Division, were staunch believers in the possibilities of an airplane patrol.

The autogiro is making an enviable record in guarding the Mexican border. In the process the Department of Justice furthers rotary-wing aircraft development.

W. F. Kelly, Assistant Commissioner for alien control, of the Department of Justice Immigration Service, which directs the Border Patrol, being an ex-pilot, became interested in the airplane's utility several years ago. His office is in Philadelphia, and one of his friends is Mr. Kellett, builder of autogiros. On trips to the border, the Philadelphia official, sought out by Henderson as a prospective airplane disciple, began to show more and more interest. He let Henderson fly him over the river in one of the planes the pilot rented for Sunday flying. That made a booster of Mr. Kelly.

In 1941 the Border Patrol got a break in the form of news that three Army autogiros were available and

could be transferred from Fort Sill to the Rio Grande by way of the San Antonio Air Depot at Duncan Field. Henderson and two other pilots were assigned to Fort Sill and the Kellett factory at Philadelphia for training, and the big day finally came for them to take over and put the Patrol on wings. That's when Henderson and the other two pilots really learned about rotary wing aircraft: Two crashed and one was severely damaged in accidents en route to the border.

"We managed to salvage one of them and that's it out there," he told us when we visited the McAllen, Texas, Border Patrol station recently. "Out there" meant a neatly painted frame building fifteen feet wide, thirty feet long and fifteen feet high, resembling an auto garage more than a hangar. With the door opened, however, we could see the Kellett inside, its rotors folded back and pinned to the elevators. We wheeled it out, unfolded the paddles in less time than it takes to tell about it, revved her up and taxied along an auto driveway across a narrow bridge onto a handy airport used by operators of orthodox airplanes.

While standing with wheels locked and after allowing the slipstream from the propeller to drive the big triple-bladed rotor slowly, the pilot engaged a clutch and power from the engine began whipping the rotor with audible force. We were turning up about 1,800 RPM's on the 220-hp. Jacobs when the rotor registered 200 RPM's and Henderson released both the wheel brakes and the clutch. The wheels rolled only about 150 feet, however, before we were air borne, and Henderson pulled the nose up steeply. We climbed on rotor lift with a forward speed of only thirty miles per hour, and even that slow velocity lagged until the pilot gently nosed down momentarily to pick up five or ten miles per hour. Then we soared out over the palm and orange trees at forty, fifty, sixty and, soon, eighty miles per hour, beating the air with our revolving wings in comparatively smooth and stable flight. We were literally flapping, with the blades drooping in front and rising at the rear, the rotor's disc leaning slightly to the left all the while. (Blades are attached to the rotor head by universal joints having both horizontal and vertical pins. At standstill on the ground, the long blades droop. As they turn, centrifugal force lifts them horizontally, and as they rev up, as in flight, their tips rise still more, coning upwards. The pilot's stick tilts the rotor head forward, to the side and back for flight control.)

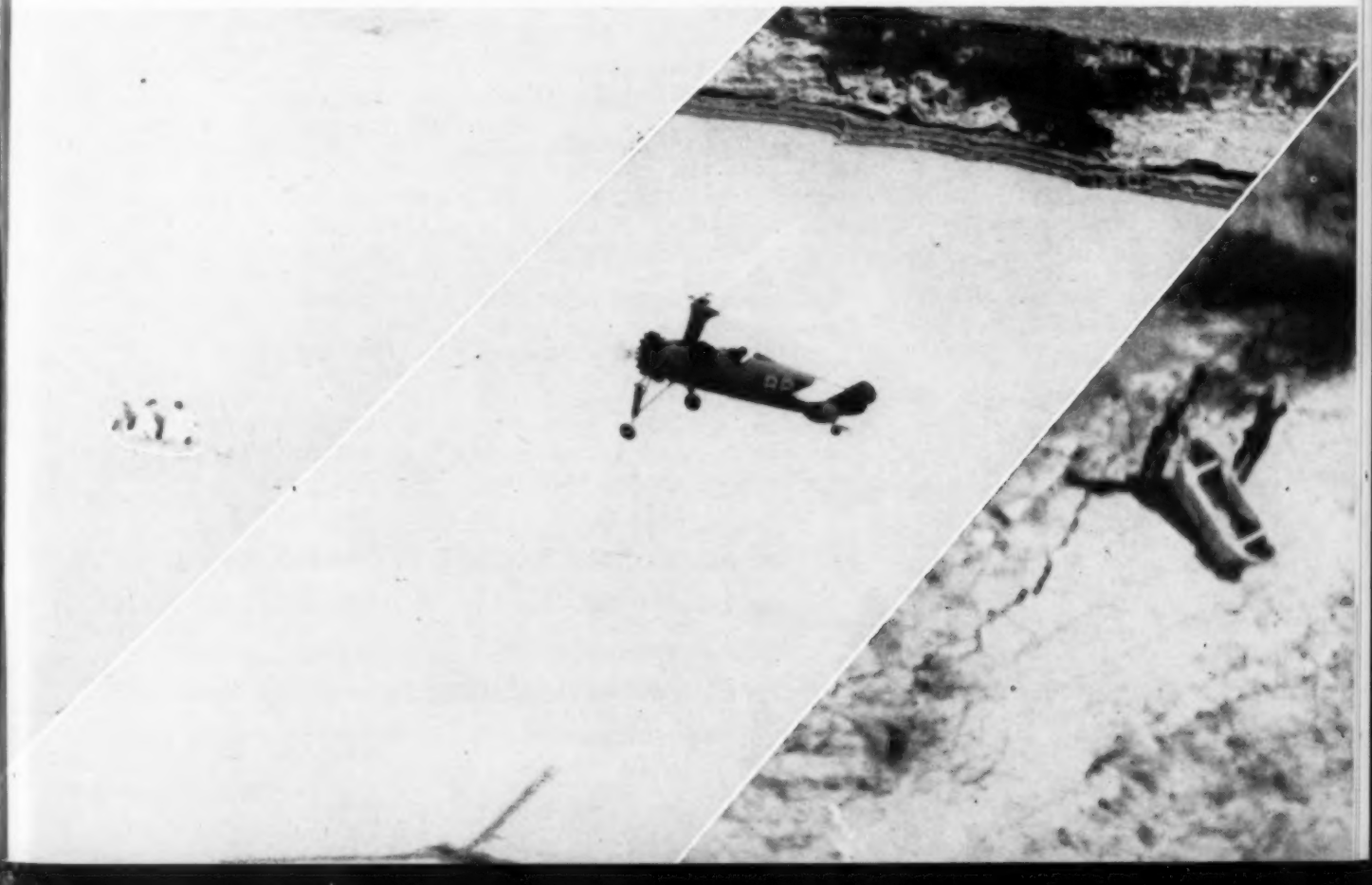
Ground Visibility Unlimited

Henderson cruised south at tree-top level to gain the river, at which we expected turbulent air and thus braced ourself. But the air pockets didn't bounce the 'giro—those flapping wings absorbed them, and we knifed through undisturbed, settling down until we were only ten feet or so above the muddy current. That put us below the tree-lined banks, and we wondered about making the sharp turns in the river's course until Henderson banked gracefully inside the course with as much control, apparently, as if we were cruising on the surface in a fast boat. Coming to the international bridge, towering above us, he tilted the rotor and we climbed over as if in a free-wheeling elevator, swishing onward towards remoter areas where smugglers and other undesirables usually try their illegal crossings into U. S. territory.

Looking out we could read footprints of birds, even, and those of animals and men jumped out of the mud in bold relief. That's the giveway to Henderson, whose trained ob-

(Continued on page 46)

Caught in the act, the smugglers shown at left below continued paddling across the river in hopes of escaping into the Texas brush, but the ever-present autogiro hovered above them, radioing for ground troopers. The photo at right shows two violators who stopped in their tracks on the U. S. shore and held up their hands in surrender to the autogiro, which kept them at bay while a radio car came to make the arrest. Center scene shows the craft on patrol at zero altitude. —(U. S. Border Patrol Photos by Kelly S. Neal.)



A PREFACE TO POSTWAR PLANNING — PART VII.

SURPLUS AIRCRAFT DISPOSAL

By GEORGE E. HADDAWAY

SO you want to buy an airplane! Well, well! How about a nice juicy four-engine bomber, or a sleek little pursuit with 1,400 horses up front! Or a big, roomy glider! Yep. We got 'em! And believe it or not, here's the story, direct from the Surplus War Property Administration:

"Between now and September 30, more than 11,000 planes are to be sold through the aviation division of the SWPA, an agency of the Defense Plant Corporation, of which 1,100 will be combat planes. The craft to be put on the market are: four-engine bombers, 300; medium, twin-engine bombers, 300; light, single-engine bombers, 300; fighters, 100; light, twin-engine transports, 350; liaison planes, 2,000; advanced trainers, 150; basic trainers, 2,000; primary trainers, 5,000, and gliders, 850."

Thirty-six sales centers are being set up all over the country. The Civil Aeronautics Administration will handle the sales on the same sealed-bid basis (10 per cent down with bid) employed in disposing of 2,500 DPC airplanes used in the now defunct CAA-WTS program.

So here's the recipe: The SWPA, an agency of the DPC, which is a subsidiary of the RFC, has turned over to the CAA, certain surplus aircraft and miscellaneous junk to be sold according to the OPA. All this equals TARFU.

The Harvard Report

Now the new aviation director of the SWPA is the Army's Lt. Col. William B. Harding, appointed by Will Clayton, Houston, Texas, cotton mogul and surplus war property administrator. Before joining the Army in 1942, Lt. Col. Harding was vice president of the Defense Supplies Corporation. A former director of Eastern Air Lines and active in Wall Street aviation, Harding is a member of the Air Research Advisory Committee, Harvard Business School.

It is perhaps coincidental, but it was the Harvard University's Graduate School of Business Administration that submitted the exhaustive report June 26 on the "Disposal of Surplus Aircraft and Major Components Thereof." The Report was made to the War Contracts Subcommittee to the Committee on Military Affairs, and if you have an extra dime we suggest you write the Government Printing Office for a copy. It's a scholarly study, although the Harvard trademark is not without prejudice. What's strange is that the basic principles recommended in the Report are not being followed. Major objectives listed as being important to the permanent military establishment are:

(1) The maximum possible technical development in aeronautics;

(2) Aircraft production facilities and organizations rapidly expansible and easily convertible in time of emergency;

(3) A reservoir of service pilots, instructors, mechanics, radiomen, and other skilled ground and flight personnel;

(4) Strong aircraft manufacturing and air transport industries, with maximum practicable employment and capacity;

(5) Public support of United States air power adequate for future security.

The Harvard Report further advises that the War, Navy and State Departments should have the objective of using surplus disposal as a positive instrument to create sound foreign relations and future trade, which may expand United States aircraft productive capacity. Last, and of least importance, is the maximum dollar return to the Government from surplus disposal,—truly of secondary importance compared with the vital need for military preparedness and international accord.

Unfortunately it looks like the money return is Uncle Sam's first consideration in getting rid of the 11,000 odd pieces of junk flying equipment that's about to be dumped on the market. Could it possibly be that the propaganda mill is using this means as additional ammunition to convince the American people there won't be any scandals when this war is over? After all, Democratic vice president nominee Truman, the Bureau chiefs, the assistant Presidents and all the newly discovered experts on postwar adjustment policies, have harped long and loud on this popular tune. As a result, they would jeopardize postwar aviation by selling off a lot of equipment just to fool the American people into believing the taxpayers' interests are being looked after.

Let the Buyer Beware

We have already observed how it works. The CAA has disposed of about 2,500 CAA-WTS airplanes of all kinds. Many of them are good, serviceable airplanes, sorely needed in non-scheduled aviation. But much of the equipment is practically worthless. All of it is going at premium prices—in spite of a threatened shortage in aviation fuel and the certainty of gas rationing come September.

And it's a case of "Let the buyer beware." Many purchasers have actually forfeited their 10 per cent deposits after finding their newly acquired airplane unairworthy, even though it had the time honored NC prefix on the license number, which until recently, has always been a badge of airworthiness and official certification.

Today the NC means nothing. With all requests for bids, an important

The surplus flood is about to break loose at the expense and detriment of postwar aviation. From our seat in the bleachers it looks like a grandstand play to fool the folks at the forks of the creek and take the purchaser for a costly, disappointing ride.

notice to prospective bidders goes out from CAA headquarters, reading in part: "Reference to NC in invitation not warranty of condition but merely for identification." Another choice morsel is the following: "Defense Plant Corporation cannot warrant condition, therefore we cannot state whether certificated, reparable, etc.; each bidder should inspect for his own protection." A few years ago an ordinary citizen would be thrown in jail for fraud and criminal action for passing off unairworthy NC aircraft to an unsuspecting purchaser. Today, however, under U. S. Government sanction, you buy an NC airplane, no matter its condition, and get a ferry permit to fly it home! From then on it's your funeral. And it will probably get the official elephant's foot upon arrival at the home field! You didn't see that busted longeron. But the Government got its money and there's no recovery. Brother, you're stuck!

Good Airplanes Not Surplus

There is room and necessity for airplanes which, according to CAR standards, can be certificated. Notice how the conventional four- and five-place Beechcrafts, Stinsons and Wacos were gobbled up at fancy prices! And the airworthy WTS trainers. There is room for many of these civilian type airplanes—and a healthy market for them, *provided they are airworthy*. It's our contention that the DPC should contract with the original manufacturer or aviation repair stations for the recertification of all equipment before it's sold. There would then be a basis for the "ceiling" prices and above all, the flying public would have some kind of guarantee, some measure of protection.

Some of the military surplus is convertible to civilian use. A worthy CAA project is now at work near Dayton, determining what changes will be necessary for CAA certification of various military craft, especially in the light, single-engine categories. An intelligent surplus disposal policy would see to it that these airplanes were sold at reasonable prices, for quick turn-over. Such a policy would bring about a healthy revival in non-scheduled flying and help keep intact our valuable reservoir of pilots, instructors, mechanics, radiomen and all the other technicians considered as indispensable by the Harvard Report. A wise disposal policy would be the release of airworthy, CAA certificated aircraft to the flying public at reasonable prices. The folks who buy these serviceable, usable airplanes could turn them in for down payments on the postwar models and help stimulate a healthy personal aircraft market immediately following a brief interlude of reconversion.

—Douglas Photo.

DOUGLAS AIRCRAFT COMPANY has established a reconversion-line at Santa Monica, Calif., to handle the change over from military to airline requirements of most of 100 DC-3's to be returned to domestic operators by Fall. Delta Air Lines received the first ship off the new line after a complete major overhaul plus removal of all Army accoutrements, addition of upholstery and civilian comforts, and of some engineering changes. From four to six weeks are required to convert each plane. This is reported by Douglas to be part of the government's plan to cushion the slack occasioned by curtailment of bomber contracts at the plant. This same method of converting surplus airplanes for commercial operations can and must be applied to airplanes now being dumped on the non-scheduled civil aviation market.

Good combat airplanes are not surplus and should not be considered surplus so long as our enemies are shooting at us. There are no surplus airplanes in China, no surplus gliders in Burma. But if you have a pile of surplus junk, why not recognize it as junk and quit winking at it under the guise of recovering some money for the Treasury Department? A lot more would be recoverable if the administration cut down on the Bureaus spreading out all over the place, mixed up in the problem of surplus disposal. And at the present low ebb of efficiency, it will probably cost more to dispose of their junk than the sales will bring in.

The Army does have some surplus trainers, some of which are convertible over to private and corporate flying utility. But the bulk of this class of stuff, which the market can't possibly absorb, might better be sold cheaply to the Latin Americans, or even given away, to create a little goodwill, plant some good American flying equipment abroad and start developing an export market. But these, too, should be made airworthy before disposal.

As for airline equipment, the Army is turning some DC-3's back to our over-taxed air transport operators. They are rapidly being converted, *by the original manufacturer*, and placed into service. This is about the only sensible department of surplus disposal and one that has been going on for some time without any help from the bureaucrats. It's been handled by airmen on a realistic basis. It is a gradual, orderly absorption that will create wealth—not destroy it. Nowhere else in the program can be found any consideration of whether the airplanes are usable or worthless.

Not CAA's Fault

With the exception of the diligent, under-staffed Civil Aeronautics Administration, not a single aviation agency is involved either in formulating surplus disposal policies or in carrying them out. The CAA has nothing to do with basic practices but serves only as a convenient tool, obeying the orders from above. It's a terrific burden as well as a thankless job.

Under our Federal civil aeronautics act, the Administrator and the Agency are charged with advancing and developing civil aviation in this nation.

(Continued on page 48)

SPOTLIGHT ON SAN ANTONIO

Wartime air transport developments have greatly enhanced the Alamo City's position as a leading terminal for international air commerce.

By HARRY C. RECKNER

WITH the view of becoming the gateway to Mexico, Central and South America, Africa and the Middle East, and already boasting one of the world's largest air freight terminals in Kelly Field, headquarters of the San Antonio Air Service Command, San Antonio has lined up four major airlines for servicing the city to take the lead in commercial airline activity in the Southwest.

Within the last six months, two major commercial airlines—Continental and American—have been granted permission to serve the Alamo City. Thus, within this short period, the city's airline service has been doubled. Realizing that this major objective was obtained after a long and bitter fight in the face of almost insurmountable wartime difficulties, the city is embarking upon an immediate expansion program to care for these hard-won facilities.

"X"-Type Terminal Planned

Of primary importance is the immediate construction of an administration building at the Municipal Airport where present makeshift facilities are recognized as inadequate. And this problem is well on the road to a solution. From the drawing boards of a San Antonio firm of architects, Atlee B. and Robert M. Ayres, has come a plan for an administration building that may result in a nation-wide departure from the present accepted types of construction. When presented to an engineer of the Civil Aeronautics Board making a survey of proposed airport construction, the San Antonio plan was termed one of the most revolutionary of recent years.

The "X" building, as it is termed, follows the general line of the letter with the arms extending from a rotunda in the center. Thus the facilities of the building are concentrated within a few steps of the centers of activity. This is a radical departure from the present western type of construction, a long rambling building extending virtually the entire length of the flight apron, in some instances for a distance of a quarter of a mile; or the so-called Chicago type of horseshoe-shaped building with its accompanying distances inconveniencing passenger traffic.

The San Antonio building would do away with passenger "hiking" and foraging expeditions for baggage, with the latter traveling on a conveyor belt between planes and the check room. It has been estimated that air passengers spend approximately one-sixth of their traveling time caring for their baggage alone.

The "X" building is constructed on four levels, the ground floor three feet below the surface, containing loading platforms for express and mail, port of entry, parking space and storage facilities for automobiles, office space for building maintenance supervisors, supply rooms, rest rooms for employes, and storage and service rooms.

The ground floor is reached by driveways, fifteen feet wide, one for entering and a second for leaving the building. The driveways enter the longer arms of the "X", which have a total length, built in a semi-circle bordering the flight apron, of 200 feet. They are sixty feet wide. The two smaller arms extend fifty-eight feet from the intersection.

All activities in the building center in the rotunda, sixty feet in diameter.

Specially designed ramps save time and handling in loading military cargo planes at Kelly Field. The device is portable, adjustable in length and can be elevated to fit compartment levels.

Here is located a central ticket office, although airline opposition to such an arrangement may bring about a change. On the first floor are the main offices, a coffee shop, dining room, lounge, private dining room, kitchens, rest rooms for the public, and telephone and telegraph offices. A balcony, running the length of the lounge and dining room, overlooks the flight apron. The first floor is connected with the flight apron by a ten-foot ramp enabling passengers to board planes without leaving the confines of the building.

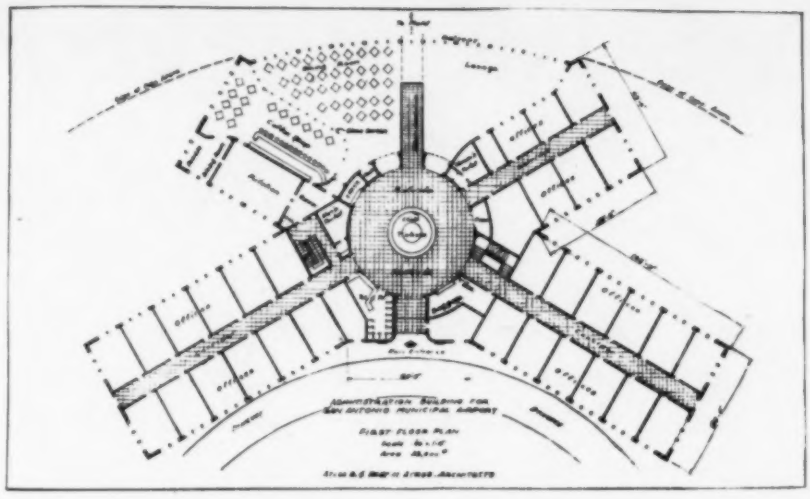
The second floor is confined mainly to offices with the corridors opening onto the rotunda which extends to the roof of this floor. The third floor and control tower house the weather station, airways communications, radio room, traffic control room, balloon room, lockers and storage space and other offices necessary to the operation of an airport.

The building itself, according to estimates, can be constructed at a cost of approximately $424,000. It will contain 33,000 square feet of space in the ground floor; first floor, 33,000; second floor, 27,000; third floor, 9,200, and the control tower itself, 600. The building would be approximately 100 feet high and constructed of concrete and steel.

Materials for the construction of the building are available and present indications point to an early bond issue in the amount of approximately $1,500,000 for the building and other necessary improvements.

Among the improvements needed immediately are adequate fire protection, construction of an east-west runway and an extension of taxiways. The airport has three runways capable of supporting the largest transport planes in existence, having been built to withstand a weight of eighty tons. The north-south runway is 200 feet wide and 5,200 feet long while the prevailing wind and northeast-southwest runways are the same length, but 150 feet in width.

Recently completed is one of the best lighting systems in the nation. The lights were installed by the federal government under a contract with the city leasing certain acreage at the Municipal Airport for the construction of Alamo Army Air Field. The lights, installed at an expenditure of approximately $160,000, were designed to care for any immediate expansion of existing facilities. Work is under way to place all power lines underground and remove other obstacles within the vicinity of the airport.



An innovation in airport terminal designs will replace San Antonio's inadequate facility. This first floor sketch illustrates the new structure's "X" design, grouping terminal building activities around a convenient central lobby.

Military Air Cargo Center

Realization that the geographical position of San Antonio places the city athwart the crossroads of the greatest potential artery of air traffic first dawned upon local disciples of air travel with the development of the great air-freight military base at Kelly Field.

Two and a half years ago, the forerunner of the present Domestic Air Transport Command was inaugurated at Kelly when contract flying to Panama was instituted. Similar contract flights were made simultaneously in other parts of the United States, and the result has been a network of freight routes and schedules which are a regular part of the Air Transport Command.

The planes are military aircraft which have been leased to commercial airlines on a cost-plus basis, are piloted by commercial flyers, and use the servicing facilities of the airline corporations.

Time is essential to the war activities, both on the home front and overseas. Air travel is the combatant of time; that's the reason why every freight shipment out of the largest air freight terminal in the country is on a priority basis.

Kelly officials know through established schedules when an important shipment can be expected or expedited to its destination. If an emergency arises, they can assign a top priority to the critical shipment, holding back the lower priority items to make space. Usually these are for immediate overseas shipment and are sent to an aerial port of embarkation.

The Kelly terminal boasts of the only known loading ramp of its kind; built to fit under the dock, it can be rolled out to the loading door of the plane. It can be elevated to any needed height automatically and has proven its value through saving loading time. Freight is transferred directly to the plane from the building, with no need to load a trailer, then load from the trailer onto the plane.

According to Capt. Allen S. Aldridge, officer in charge from 600,000 to a million pounds of priority air freight varying from complicated instrument mechanisms to life-giving blood plasma are handled through the terminal monthly. In May, for example, 384,000 pounds of priority freight was shipped from the loading docks at Kelly and 280,000 pounds received from other domestic points throughout the nation.

Not alone is inanimate freight handled by the Air Transport Command. Often when a special project has been assigned to Kelly or to some other Air Depot, the need for highly trained specialists cannot be met from the personnel working at the designated point. Priority is arranged for these men and women to be rushed to the spot to help complete the assignment.

San Antonians believe that the great airliners of the Air Transport Command, carrying lend-lease materiel to our Latin-American neighbors and the weapons of war to our fighting men in North Africa, Sicily, Italy, the Near East, India and Burma, will doff their olive-drab war paint in the postwar era and undertake peacetime pursuits. ★ ★ ★

ARE THE AIRPORTS *Really* COMING?

Everyone now agrees that if flying's to prosper we'll have to have more landing facilities. The hottest subject in domestic aviation today is: "How will we get 'em; when, where will they be built and what kind do we want?"

The airports are coming! At least that's what the ordinary citizen would gather from the revived local and national interest in the subject of airports. The drive is now on; witness the wave of local, state and national meetings purely on airport matters.

At Texas A. & M. College, June 14, 15 and 16, the Fourth Region, CAA and the College sponsored a short course and conference on Airport Management and Planning. Although many involved and highly technical aspects of airport construction, planning, enlargement, management and maintenance were discussed at length, there were many papers and discussions delivered by recognized southwestern airport authorities of a non-technical nature. These were directed to the ears of city and county commissioners, mayors, city managers and just plain small town business men from communities not now on the airport map. Little did the co-sponsors of the conference realize that a large segment of registrants would be made up of people of those categories. A healthy and revealing index!

Arkansas held a state airport planning conference at Fayetteville the latter part of July, and Louisiana will put on its two-day intensive planning conference at Baton Rouge August 15 and 16.

On the national scene, July saw two significant airport meetings. The American Association of Airport Executives held the American Airport Forum at Chicago, July 10, 11 and 12. Visitors heard such outstanding speakers as Kirk Baldwin, Dudley Steele, Bob Aldrich, Don Martin, Howard Crush, Capt. H. E. Kezer, Hervey F. Law and Oliver L. Parks. But what probably will be recorded as the most significant meeting of the year was the Joint Airport Users' Conference, July 24 and 25 in Washington, sponsored by the National Aeronautics Association. Fifty-one representatives of aviation, business, industrial, education and government organizations were invited to participate and join with the NAA in a co-ordinated nationwide educational program to encourage local development of a vast chain of postwar aircraft landing facilities. The meeting was devoted to reaching agreement on fundamental factors of aircraft landing requirements, airport sizes, nomenclature, legal definitions and legislative requirements.

Four Types of Facilities in NAA Airport Program

Airparks

Designed primarily for the private flyer and located within or near the corporate limits of the municipality, the "airpark" would usually consist of two runways, approximately 2,000 feet long and from 300 to 500 feet wide, arranged in either an L, X or T shape. The surface would be either turf or pavement. It would be attractively landscaped as a community recreational center.

Air Terminals

Ranging in size from what are classified by the Civil Aeronautic Administration as Class 2 to Class 4 airports, this type of facility is advocated for the larger communities on present or proposed feeder and trunk airline routes. It could serve both scheduled and private aviation, but in case of increasing traffic, could be devoted to commercial operations alone. The cost of these facilities would usually range from $250,000 upwards.

Flight Stops

These would be intermediate landing facilities, consisting of single turfed runways approximately 1,800 feet long by 300 to 500 feet wide, located adjacent to main highways and approved country roads for the convenience and safety of the private flyer. If the full network of air parks and air terminals is completed, only about 100 of these strips would be needed.

Air Harbors

These would consist of quiet bodies of water near communities or recreational areas, and would include facilities for gassing, servicing and storing float-type airplanes. The cost would range from $1,000 up.

The program is designed primarily to foster two types of landing facilities, "airparks" for private flying and "air terminals" for commercial air transport. It also preaches the development of "flight stops", or intermediate landing areas, and "air harbors", or water landing facilities, and a nationwide, standard airmarking system.

It was proposed that a general conference of all American organizations interested in airport expansion become a permanent establishment. William P. MacCracken, Jr., general counsel for the NAA, was named chairman of the continuing Joint Airport Users' Conference. Lowell H. Swenson, NAA manager, will be executive secretary. It will be from this profitable and far-seeing conference that thousands interested in airport expansion will find the long-needed centralization of the best thought, direction and action in airport planning and landing facility promotion.

Additional impetus was given airports on the national scene in July by the announcement of the CAA national airport program calling for the construction of new fields to bring our present system to a total of 6,000. Most of the new airports would be in the Class 1 and 2 category for the use of non-scheduled operations. It is significant to note that the Assistant Secretary of Commerce, William A. M. Burden, detailed the plan to the nation over the Columbia Broadcasting System on Sunday, July 23.

The National Aviation Clinic at Oklahoma City in November can be expected to carry on and perhaps contribute additional solidification to all the thought-provoking arguments for an expanded airport program. All in all, 1944 has been a good year for interest in the subject. We shall spend the next few months confidently observing the ultimate results of all this study, action and recommending, in high hopes that the first basic element of healthy postwar expansion of commercial and non-commercial civil aviation will be provided—airports and landing facilities in the quantity and quality needed to bring aviation into reach of *all the people*.—G.E.H. ★ ★

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Innocuous INTERCEPTION

Another Chapter of the Unscientific Method of Navigation in Which Airplane Meets Boat

By LARRY J. FISHER
1st Lt., CAP TFP

THIS time we'll give boat-airplane interception, both graphically and for the E6-B type computer. They're easy. We'll breeze through the graphic solution since it is identical to the last chapter's method and condense it to one "pitcher" diagram.

But first the problem: We are ordered to intercept a boat at sea. At the time of our takeoff, the boat bears 30 degrees from us at a distance of 173 miles. It is headed 90 degrees at 30 knots.

The wind at our base is from 260 degrees at 23 mph. It's one of those nice textbook winds that remains constant—over land, sea and air.

Our trusty crate cruises at 138 mph. We have plenty of gas so there is no radius of action involved.

We are now ready for business:

Graphic Solution: Airplane-Boat Interception

To make it easy, begin by spotting our Base at the lower left of the paper, placing the sheet vertically so you'll have plenty of room to go up. (See Fig. 1).

The first fact we have for sure is that the boat (target) at the time of our takeoff bears 30 degrees from our Base at a distance of 173 miles. This line is our Constant Bearing No. One.

(As explained in the last chapter, Constant Bearing is simply the direction the target bears from you at the beginning of the chase. The distance between target and interceptor is the length of the line.)

When working boat-airplane interceptions, it is simpler to convert statute miles and speeds to knots, thereby avoiding mixed figures. Anyhow, in plotting on blank Mercator charts and in celestial you'll use knots, so it's a good habit.

But don't be frightened, fellow figure-dodgers, for one side of your trusty little computer will do the work for you.

Since the 173 miles was statute

FIG. 1

miles and we wish to convert to knots: Under "STAT" set 173 (actually 17, plus 1 and ½ notches). Then read under "NAUT" 150 nautical miles (15). We know now that the length of our first Constant Bearing line will be 150 to scale since we've gone seafaring.

Step 1: Lay off Constant Bearing No. One, 30 degrees from Base, to scale for 150 nautical miles.

Step 2: From the (northeast) end of above line, plot the vessel's course, 90 degrees, and extend indefinitely. The ship's speed is 30 knots (per hour) and we're interested in his position at one hour, so plot his 30 knots to scale. A knot is a nautical mile, which makes the figuring easy.

Step 3: From ship's one hour position, plot a second Constant Bearing line. It is also 30 degrees, parallel to the first C. B.

We come now to our old familiar friend, the triangle: Side A: Wind; side B: dotted airspeed-true heading; side C: Solid true course-ground speed. The only side on which we have definite information is the wind: 260 deg. at 23 mph. Our computer converts the 23 statute mph. to 20 nautical by a whirl of the disc, as explained above.

Step 4: Lay off wind from Base, 260 degrees at 20 knots.

Step 5: From end of wind line, swing dotted airspeed line . . . whoa! Our airspeed is 138 mph. statute. Again the computer converts this to 120 knots nautical. Now, swing the airspeed to intersect Constant Bearing No. Two (Step 3) and find true *heading* of 35 degrees to intercept.

Step 6: From *Base* plot solid true course-ground speed line to above intersection. Find true *course* of 42 degrees and ground speed of 135 *knots*.

Step 7: Extend above line (airplane's G/S line) until it crosses ship's course line. The point they meet is the Point of Interception. It's handy to remember that *ground speed lines* of target and interceptor are the ones to extend to find P. I.

Measuring along the boat's course, we discover that it will travel 38 nautical miles to point of interception. The intercepting plane will breeze along 172 miles to be at the same point in one hour and 16 minutes. These speed figures can be found handily on your computer.

Or you may prefer to find them by using the Rate of Closure method given in detail last chapter. Briefly, here's how: From the length of Constant Bearing No. One, 150 nautical miles, subtract length of C. B. No. Two, 32 miles; the result is 118, which is Rate of Closure.

Divide the C. B. No. One, 150, by the Rate of Closure and find 1.27. The one represents one hour. Since the point 27 is a fractional part of an hour, multiply it by 60 and get 16 minutes: Total one hour and 16 minutes.

As my regular customers have perceived by this time, the graphic method for airplane-airplane interception and boat-airplane interception are exactly the same.

The E6-B solution for the two is different, however. The airplane-airplane was given last time and here's the other one.

E6-B Solution: Airplane-Boat Interception

After all my drum-beating for *up* wind plotting with the E6-B, this particular solution is one of the few in which it is necessary to plot the wind *downward* (downward from the center dot). Using the same problem as above, follow me through and see how easily it's done.

Step 1: With the square grid

NAME YOUR SPEED!

...one of the many vital questions on the "BELLANCA AIRCRAFT QUIZ"

AFTER the war, when America settles down to the business of peace and "the pursuit of happiness" in a liberated world, you'll see more sportsmen's air races. You'll see more air travel, too. And wherever flying people meet you'll hear talk of speed!

There's a big difference of opinion about speed. Our Aircraft Quiz has brought that out from hundreds of the flying enthusiasts who've sent in their Quiz returns. Some believe in "speed at any price"—others prefer to compromise a little on speed for the sake of greater efficiency, added safety, more range. How do *you* vote?

Speed is only one of the vital questions raised in our Aircraft Quiz. It *is* a vital question, too. Bellanca is going to build the *right* speed into the post-war planes which many are already trying to buy. Wait until we've finished our war work, *all* of our war work, and you'll see a Bellanca post-war plane that will give private owners exactly what they want. Its speed will be to the taste of the majority.

But that isn't all. Many other Bellanca features will be in line with popular demand. Engines, landing gear, range, seating, construction, capacity and other essential factors that are covered in our Aircraft Quiz are now being voted on, *Yes* or *No*, by men and women all over America—by many in far-distant places, serving with the Armed Forces—who are checking off their answers on this popular Quiz. In this helpful way, you can let us know what *you* want *us* to build for your post-war flying.

Why don't you send for this Quiz today? Just give us your name and address—we'll mail you the Quiz, and later you'll receive our report on all returns, so you can compare your answers with thousands of others. Write us now! ...Bellanca Aircraft Corporation, Dept. S-8, New Castle, Delaware.

Keep on Buying U. S. WAR BONDS

BELLANCA

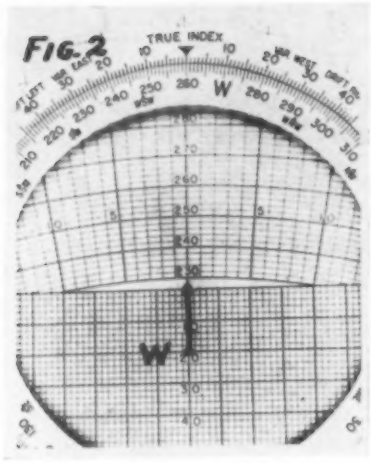

FIG. 2.

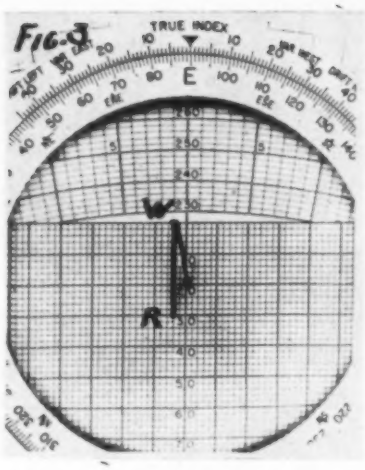

FIG. 3.

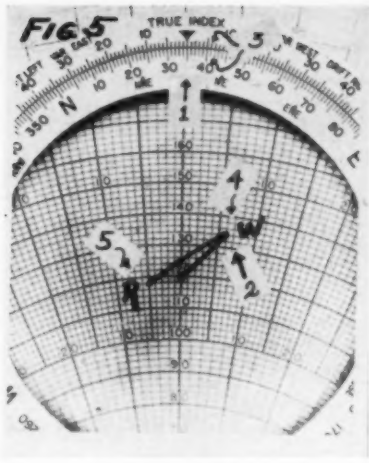

FIG. 5

("400" side) showing through the window, set the wind direction, 260 degrees, at True Index. Put the top of the square grid on center dot. From the center dot, lay off the wind *downwind* for 20 knot velocity. This will be to the printed 20. Mark this point "W" for wind. (See Fig. 2).

Step 2: Set Boat's course, 90 deg. to True Index. Slide slider to put top of square grid on the "W" point. Using the grid lines as a convenient ruler, draw line directly down from this point to the printed 30. This represents the boat's speed of 30 knots. Mark the end of this line as "R". (See Fig. 3).

This completes all the drawing and with the little jiggling outlined below, we'll have all the answers.

Step 3: Reverse the slider so that the "300" side shows through the window. Set interceptor's air speed, 120 knots, on center dot.

Step 4: Set Constant Bearing 30 deg. on True Index. Note that the "R" dot reads five degrees on the slanting lines; also that it is on the left side of the vertical center line of the slider. (See Fig. 4).

Take a look at the True Index scale. This is the topmost scale on either side of the True Index Arrow.

Now comes the jiggling aforementioned. We want the Constant Bearing to be below a figure on the True Index scale which will equal the figure on which the "R" dot is resting. (Gosh! Whatever got me to pretending to teach navigation!)

Since the "R" dot is on five, let's rotate the window and, experimentally, put the Constant Bearing, 30 deg., under 5 on the True Index scale—*on the same side* as the "R" dot. (See Fig. 5).

Ah! It worked! The "R" dot still reads 5 degrees. Under 5 on the True Index Scale we find our C. B. 30 resting quite comfortably on the same side of the vertical center line, and I hope my explanation is fairly clear. If not, maybe looking at Fig. 5 will help.

Sometimes the "R" dot will not be left so conveniently on the same figure. The big idea is to adjust it and the Constant Bearing so the True Index scale and the "R" dot will read the same amount—*on the same side* of the computer.

If the "R" dot had been on the right, we'd have wanted the C. B. to appear on the right side also, under the True Index scale.

Now we're ready to read off all the answers:

1. At the True Index, read the True *Heading*, 35 deg.
2. At the "W" dot, read 6 deg. drift correction.
3. Apply this on the topmost scale on the same side, read below the six notch and find the true *course* 41 degrees.
4. At the "W" dot, read 135 knots ground speed.
5. At the "R" dot, read 118. This is the Rate of Closure.

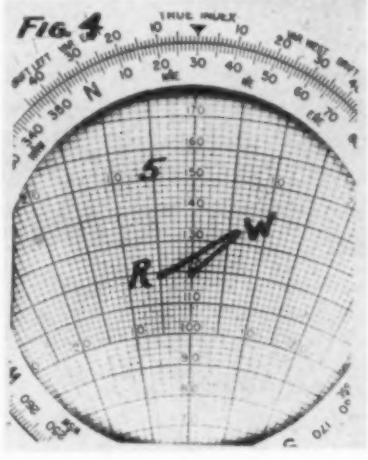

FIG. 4

As explained previously, by dividing the length of the first Constant Bearing (150 nautical miles) by the R/C (118) we get the time to intercept.

This is done very easily on the E6-B's slide rule face. Set the hour arrow under the R/C 118. Then under 150 on the outside miles scale read one hour and 16 minutes.

To find the airplane's distance to interception point, simply set the hour arrow on the plane's ground speed, 135 mph, and above one hour and 16 minutes, read 172 miles.

The boat's distance to intercept may be found similarly.

If, on arrival at point of interception, there is nobody home—what to do? Allow a positive or negative lead in your original computations as follows:

1. *If the objective (target) is approaching your base:* Instead of plotting on the reported speed of the target assume that it is 5 to 10 knots *faster*. Then plot to that point. On arriving at P. I. and there's a nice empty ocean you'll know you're *ahead* of the target. Change course to the *opposite* direction of his and you'll meet him.

2. *If the target is moving from your base:* Assume his speed is *slower* and plot accordingly. If he isn't there you're *behind him*. Head the *same* direction as his course, sneak up behind him and let him have it.

Here's the Unscientific formula:

1. APPROACHING: — assume faster target speed, go to meet him along reverse course.

2. DEPARTING:—assume slower target speed, chase him on the same course as he's headed.

Hope the non-technical statements will help you to remember the easy way.

I'll be interceptin' you. ★ ★ ★

Feathering a wounded Fortress . . .

Roaring over the blazing target of Schweinfurt . . . ploughing across flower beds of flak . . . and skies deadly with missiles of Messerschmitts—a Flying Fortress is sieved with shells. Bomb bays empty . . . wings riddled, gaping holes in tail and belly, two engines out, the valiant warrior limps home—leaving behind a flaming hell on earth.

A few seconds after each engine cut out, the co-pilot feathered its prop. The two feathered propellers act as powerful brakes, stop engine rotation, prevent vibration which might tear the wounded engines loose. And feathering also stops "windmilling", reduces drag, restores maneuverability . . . enables the crippled Fortress to get home.

The motors which feather many of the Hamilton Standard Hydromatic propellers on the Fortresses were designed, engineered, and are manufactured by Air Associates.

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Small, light, rugged, efficient, made of the best materials and hand assembled with the highest standards of craftsmanship, model EE-125 is only one of many precision-built geared and direct drive types of motors designed for continuous or intermittent duty that Air Associates manufactures to Air Corps specifications.

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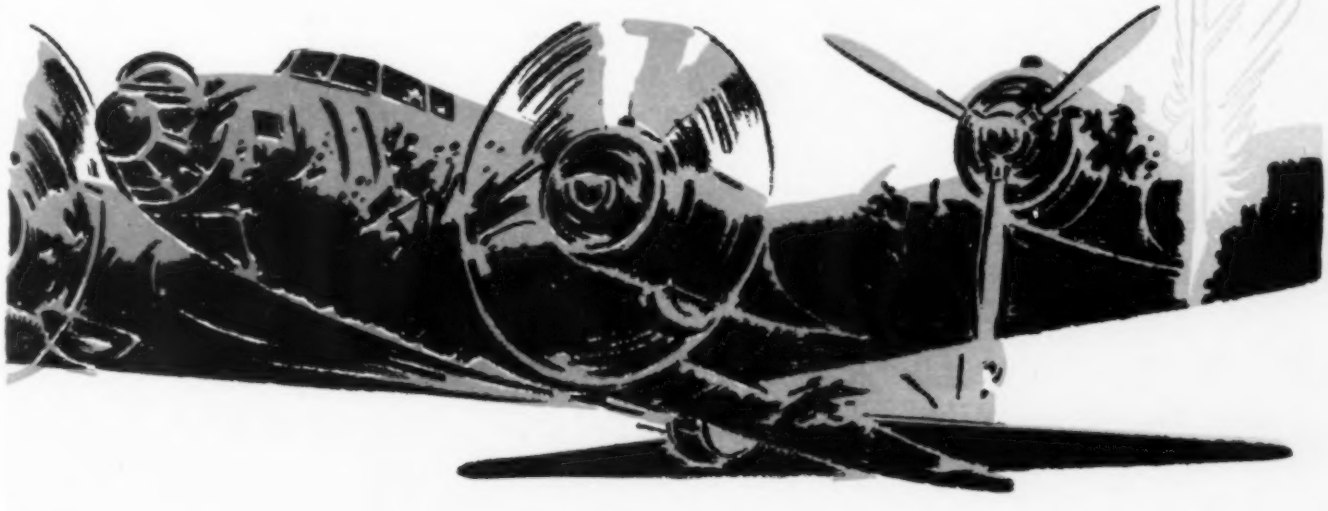

THE Sky's the Limit

BY BILL GREEN

More about airports. . . . Tulsa offers proof that citizens can operate municipal airports with common sense and fairness. . . . No monopolies should be allowed on city fields. . . . Looking abroad at our diplomatic flops.

One of the most successfully operated and satisfactory municipal airports we know of is the Tulsa Municipal Airport. It would be worthwhile for everyone interested in airports to study the methods of operating this field.

As mentioned before, we believe that public enterprises, like the Municipal Airport, should be controlled by a non-political, non-salaried board. This is the case in Tulsa where Tulsa Park Board consists of Tulsa citizens who serve without salary. They direct the Tulsa City Parks and the Tulsa Municipal Airport. These men presently consist of a newspaper editor, who is president, a real estate man, an oil man, a lawyer, and the mayor, who is also an oil man. With no political axes to grind, and no salaries to attempt to hold on to, these board members have considered in every case only what Tulsa needed and what in their best judgment should be done about it. They have resisted pressure to use special products, special gasoline, etc., and have treated all comers as equals.

They have a manager, Charles W. Short, Jr., who is responsible to them and carries out their orders. Many people believe that Charley Short is responsible for all the ills they conjure up; however, from my association with the Park Board, I know that in most cases he is simply carrying out their policies, which in my estimation are eminently fair.

This combination of the "Citizens Management Committee," otherwise known as the Tulsa Park Board, and Mr. Short, as manager, has resulted in one of the finest airports in the nation. It has duplicate runways, several thousand feet longer than normal; they are paved with broad white concrete that requires little or no maintenance, may be seen at night, and does not have the heat-wave normal to black asphalt. It has taxi-strips completely surrounding the field, it has a control tower, it has fine heated hangars; it has a school, two restaurants, terminal building, repair facilities of every kind, size, shape and description, gasoline truck service, fire equipment, etc. The rules have been reduced to a minimum although there are still some people who complain at any rules at all.

This airport has operated since its inception without requiring any annual budget to be paid by the local citizens. In other words, it has operated from its revenue and has made a substantial surplus over its expenses, which surplus has thus far been put back into the business to improve the facilities. No doubt some day this airport will be able to pay back cash dividends to the citizens.

We would like to point out one other thing in connection with having the local airport run by an impartial board of citizens who are airminded: During wartime, the Army or Navy have selfishly taken over a great many municipal airports to the exclusion of all private comers who did not go through a terrific amount of rigmarole and red tape to be permitted to land there. We think that this was a terrible mistake. For example, the Army has taken over the Oklahoma City Airport, which is the only all-weather airport of any consequence there. We know of a citizen who landed his airplane there and suffered considerable embarrassment, being detained for a while as a possible spy. We know that the Oklahoma City Airport is not yet a satisfactory airport in view of the fact that it has been paved with asphalt which continuously requires rebuilding, and thus they frequently have runways in only one direction. Love Field in Dallas was likewise taken over by the Army in spite of the fact that other airports and airport sites were available for them. Tulsa lets Army, Navy and National Guard use the airport all they want to but refused to exclude the private owners who actually helped pay for it.

We do not say that the Army should be excluded from a city; we simply say that the Army can build and has built in hundreds of instances, more satisfactory airports in a shorter length of time than the ones that they have taken over, without disrupting the local traffic or taking from the local citizens those things that they had built up for their own use and at their own expense. We have suggested before that it is far better in large places such as Oklahoma City and Dallas, for the Army or Navy to establish separate airports in view of the fact that growth and expansion of air service will undoubtedly require additional airport facilities anyway, or they could simply allow private owners who were already there to remain there. We do know there have been numerous accidents and near-accidents due to the fact that in those cities where the Army or Navy have taken over the municipal airports and excluded local citizens, in wet weather, the other airports are not satisfactory. We have been on airports at Wichita Falls, Dallas, and Oklahoma City, where we felt that we landed or took off with considerable risk of life and limb. We think that it was short-sighted to attempt to stop all private air transport during wartime, as we have personally travelled almost entirely in the interest of the war, have found it extremely difficult to do so, have had no other transportation facilities available in most cases, and all the time have had the Army beating us on the back to get the job done quicker. Many of our friends have had similar experiences.

What we are trying to say is that any community could place its air problems in the hands of a well selected, non-political, non-paid group of local citizens, who, after gaining some experience in the matters involved, would probably direct those affairs about as well as anybody could do. Those local citizens should not necessarily be aviation people, as aviation people too often are narrow-minded. They could be newspaper men, doctors, lawyers, engineers, and business people.

The worst thing we have seen in aviation, and this applies equally to other businesses, is the greed and selfishness of certain individuals and certain companies. As we have said before, we have seen certain airline people apparently attempt to run

(Continued on page 42)

Presenting
LOCKHEED'S
Constellation
A STORY OF
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1783
1786
1852
1903
1906
1909

The epic of flight, of man's resolute will to win the air, is still in the making.
Yet when the story is entered in the chronicles of the future,
the Constellation will signal the end of one chapter and the beginning of another.
It will be recorded then: the routine transcontinental flight of less than seven hours,
the precious cargoes swift to the war fronts, the superior speed and rate of climb and load capacity.
All these will be revealed and it will be evident that in the year 1944
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establishing new standards in air transportation and setting a true course
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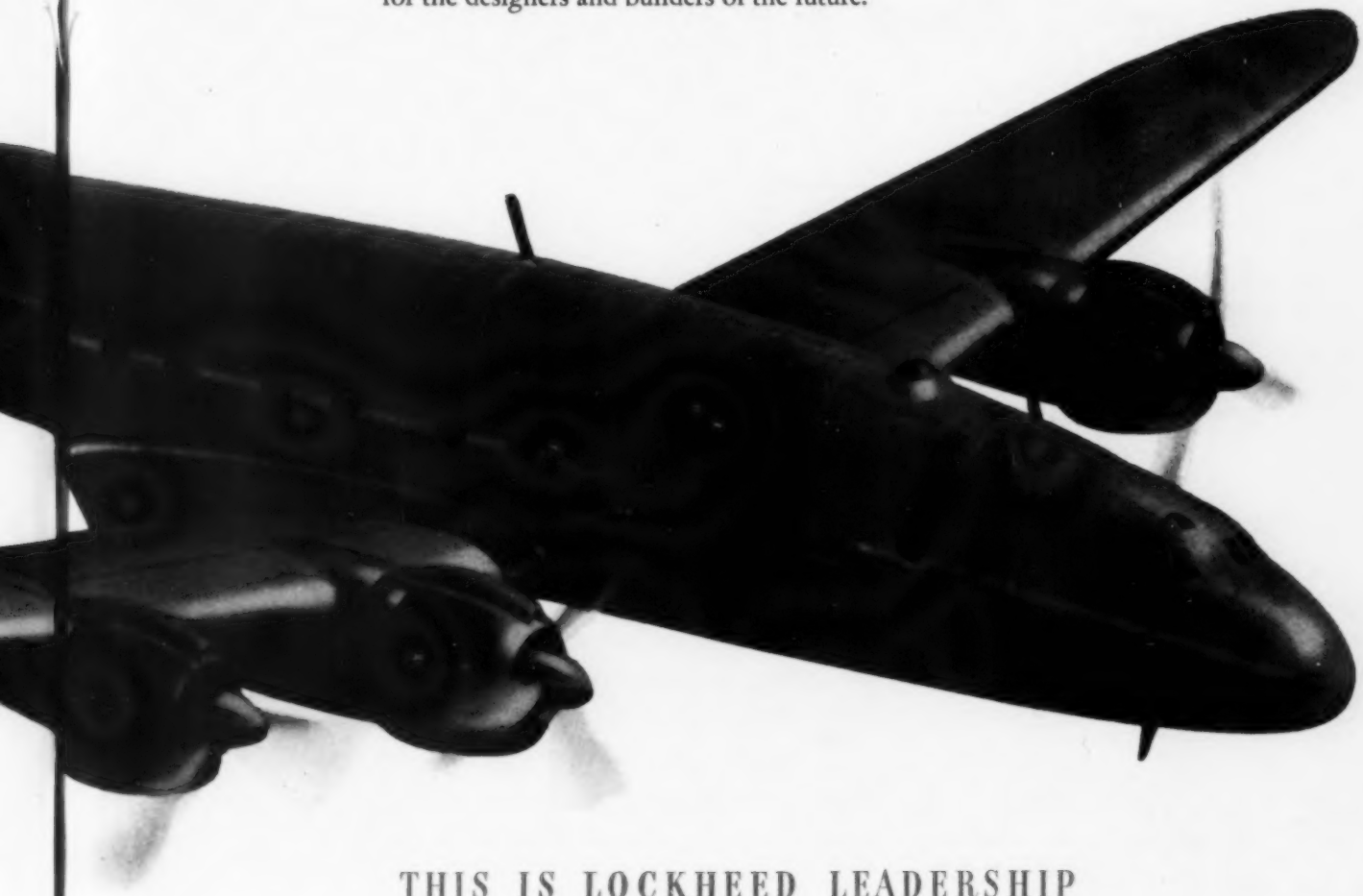

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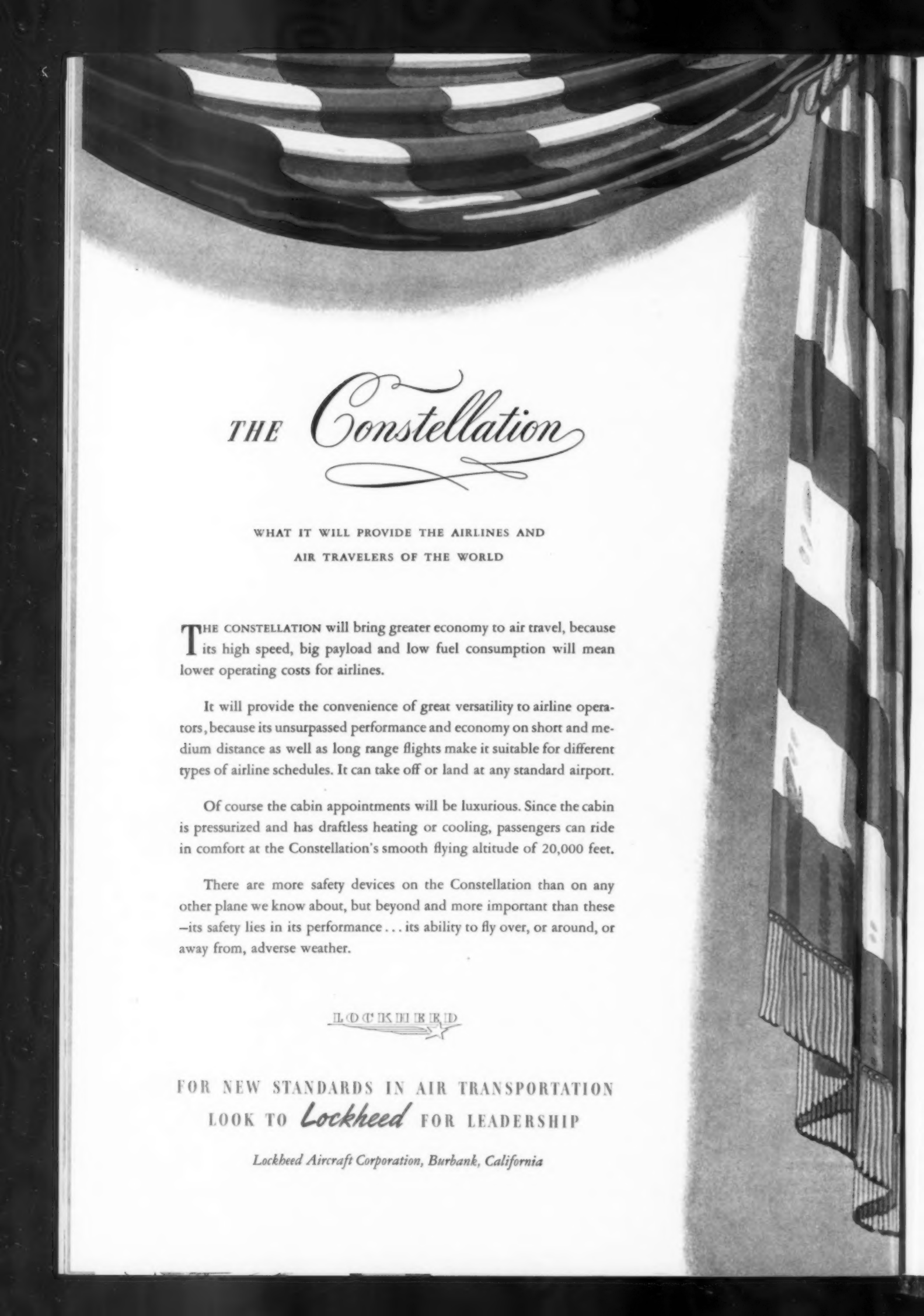

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Of course the cabin appointments will be luxurious. Since the cabin is pressurized and has draftless heating or cooling, passengers can ride in comfort at the Constellation's smooth flying altitude of 20,000 feet.

There are more safety devices on the Constellation than on any other plane we know about, but beyond and more important than these –its safety lies in its performance . . . its ability to fly over, or around, or away from, adverse weather.

LOCKHEED

FOR NEW STANDARDS IN AIR TRANSPORTATION
LOOK TO *Lockheed* FOR LEADERSHIP

Lockheed Aircraft Corporation, Burbank, California

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In the use of stainless steel and similar alloys, Solar has become a recognized authority—a dependable source for the solution of difficult problems of designing, forming, welding and fabricating these metals. This accounts for the fact that such a large proportion of the war planes now destroying "Fortress Europe" and the Southwest Pacific island strongholds are equipped with Solar exhaust systems.

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TEXAS PRIVATE FLIERS RENEW ACTIVITIES

First convention since Pearl Harbor elects Stringer president, broadens constitution.

WHAT might become the pattern for state organizations devoted to the protection of personal and non-scheduled civil aviation from restrictive and harmful legislation came to life at Austin, Texas, July 28-30, when the Texas Private Fliers Association held its first annual convention since voting to become inactive after the Japs' attack on Pearl Harbor in 1941. Over a hundred airmen and airwomen from every section of Texas registered at the convention and voted unanimously to start afresh for the "protection and advancement of aviation in the State of Texas."

Members expressed the opinion that flyers must organize locally in their own home towns, and in their respective states, as well as bind themselves to national organizations operating in the interests of personal aviation. Airmen, and people interested in aviation in Texas, believe they have the answer to the ideal state organization in the Texas Private Fliers Association.

Veteran airmen attending the conference pointed out that TPFA was largely responsible for the fact that Texas is one of the few states without restrictive state aviation legislation, which accounts for its healthy aeronautical development as reflected in its number of airports (largest in the U. S.), number of certificated pilots and aircraft, and airline route mileage. TPFA has been active during the past years in defeating crippling and dangerous state aviation legislation.

The annual banquet address by Dr. John H. Frederick, professor of transportation, University of Texas, and a luncheon address by Dr. James B. Boren, president of Hardin College, Wichita Falls, keynoted the convention. Dr. Frederick spoke on State Aeronautical Legislation, in which he specifically analyzed both injurious and beneficial state laws and appealed for uniformity of legislative and administrative procedures. He advised that uniform and municipal and state airport regulations and practices be set up; that more co-ordination in state laws and municipal ordinances with Federal laws be striven for, and that there be a minimum amount of duplication of functions. "Sound and intelligent aviation legislation will come," he said, "if all of us strive to promote harmony of thought and action for common objectives between all levels of our political structure and between the individual units that compose it."

Dr. Boren complimented the Association for its campaign to establish ground and flight training courses in secondary schools, high schools, colleges and universities throughout the state.

Surplus Aircraft Disposal Hit

Resolutions adopted included the

(Continued on page 48)

Important

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YOUR *"Warehouse Annex"* FOR AERONAUTICAL SUPPLIES

SKY'S THE LIMIT

(Continued from page 34)

other people out of the air; at least in legislation they usually look after their own problems and let the other guys' problems go or else do something that tends to throttle him. We have seen individual operators on fields attempt to throttle all competition and other services. We have seen pilots and aircraft owners who wanted the world for themselves but didn't want to pay for it. We think that there is room for all these people as well as the host of pilots and plane owners who go about their own business, paying their own way, but we think the air would be cleared up considerably by a little restraint and fair play on the part of all interests.

The United States is not going to put up with monopolies; it has repeatedly passed laws aimed at breaking monopolies and there is no sense of anyone attempting to exercise a monopoly even in a small way.

We have repeatedly said, and we say again, that we do not expect any violent boom in aviation after the war; however, we know that it has not reached its climax and that a slow, steady growth is to be expected. If for no other reason, we know that the population increases at the rate of two and a half million persons per year, therefore, additional customers become available.

We have all seen many airports established that were later abandoned because there was no demand for them. We, therefore, do not think that the national government, state government, or municipality should build anything that hasn't been thoroughly evaluated and found necessary and, in general, we don't believe the Federal Government and municipalities should foment aviation by providing facilities for some private operator to operate for his own benefit. We think the best fomenting the government could do would be to establish uniform rules and regulations; to keep taxation at a minimum on this already super-expensive method of transport; to prevent state regulations contrary to the best interest of aviatiors, plane owners and aviation in general and to continue its programs of research and development of aircraft and engines, and navigational aids; to establish and maintain its air navigational aids such as radio beams, lights, blind landing systems, etc., and control towers and weather, and to continue the inspection of aircraft and pilots.

Airmen's Calendar

September 4-6—Aero Medical Association annual meetings, Hotel Jefferson, St. Louis, Mo.

September 13-15—SAE National Tractor Meeting, Hotel Schroeder, Milwaukee, Wis.

October 5-7—SAE National Aircraft Engineering & Production Meeting, Engineering Display, Hotel Biltmore, Los Angeles, Calif.

November 9-10—SAE National Fuels & Lubricants Meeting, Hotel Mayo, Tulsa, Okla.

November 11, 12, 13, 14, 15—Second Annual National Aviation Planning Clinic, Oklahoma City, Okla.

December 4-6—SAE National Air Cargo Meeting, Hotel Knickerbocker, Chicago.

Bug in Your Ear

While so many things are happening here and there, and so much fuss and fury occupy the American scene, and before you vote in the national elections, let's stop and think over a few things.

Several years ago we had a dinky little airline spring up in this country. It hauled mail across to the Bahamas. Pretty soon it hopped down to Cuba. In later years we find Pan-Am flying all around South America —out to Hawaii, and on to Hong Kong, and from Hawaii to New Zealand, and a few more places. Then we find them flying across the Atlantic to Lisbon. Seems that Pan-Am had a tough time getting into Hong Kong, and into Lisbon. Those were the only places in those respective continents that they could get in. Did you ever stop to think that no one at all wanted to go to Lisbon? All the airline passengers wanted to go to England — or to France — or to Germany — or to Italy. But those countries, protecting their own Aviation, refused to let us land there.

France, our wonderful ally, who laid down on its own business and permitted Germany to walk right through the country, almost without a fight, is very glad to have us take back their country for them, and are even now bickering about the way we do it—and how we run the show. I doubt very much that they plan to let one of our airlines land at Cherbourg, or Le Havre after the war. England, our wonderful ally, supposed to protect the Southwest Pacific, and its own colonies, Australia, and India, etc., failed miserably. Who does the old job? You guessed it. Uncle Samuel, the old boy they wouldn't let land his airplanes in the Thames, or at Belfast, or in Australia; he's the guy they get to help 'em. They also, very considerately, let us pay for it. Incidentally, they also permit us to pay for a very large part of what **they** do. Do you think

(Continued on page 53)

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NAVY CREWMEN SERVICE PLANES BLINDFOLDED

LITTLE-KNOWN tricks in the grim business of servicing and arming carrier-based Navy planes are contributing to the superiority of U. S. fleet units in their attacks against the Japanese. Most persons have heard of machine gunners being trained to take a gun apart, replace a damaged part and reassemble the gun in quick time, all the while being blindfolded. Well, crews are doing just that in servicing combat planes — they load bombs, ammunition, fuel and other supplies in total darkness and even with bombs and shells bursting nearby on darkened airports and tossing decks of carriers.

Dive Bomber Replica

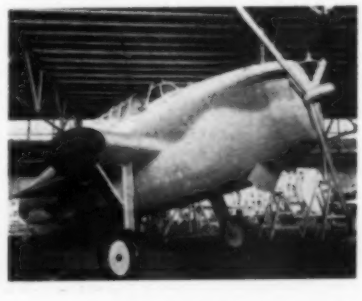
For developing such skill, the Navy uses unique full-scale replicas of combat planes. Armament crews practice loading and mounting machine guns, bombs and ammunition cases on the replicas, repairing and replacing damaged parts until they are able to do it entirely by feel.

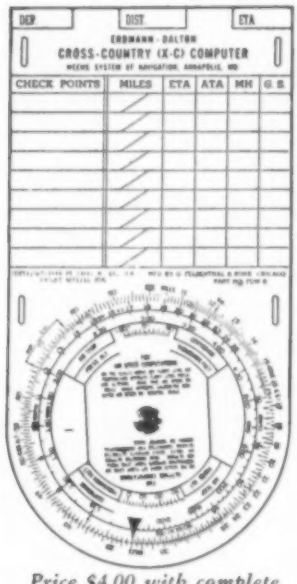
In appearance the replicas duplicate the real airplanes except for portions omitted because they serve no purpose. All dimensions conform to blueprints for the actual airplane. They weigh from 3,700 pounds to 5,700 pounds without their loads of bombs and crews. They are constructed from non-strategic materials such as plywood, cold rolled steel, mild steel, sheet iron, etc. The wheels, including tires, are of wood. Landing gear struts are of iron pipe. Their cost is below ten per cent of the cost of the actual airplane and weigh between one-fourth and one-fifth as much.

Construction time of such replicas depends on the extent of the production line. One of the largest producers of these devices, the Ballard Aircraft Company of New York, operates on a schedule of one per day. When a speed-up is necessary, this is increased to two or three replicas a day.

Thousands of Navy ordnance men have received training on replicas of planes. Recently a large number of the devices, which had seen gruelling service here, were reconditioned and sent to England and Facific areas. While it is possible, to some extent, to conduct such training on combat planes between missions, the principal purpose behind many replicas is to speed familiarization training in certain areas on certain models not in use in those areas but due to be assigned there.

Torpedo Bomber Replica





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Announcing

NEW CROSS-COUNTRY COMPUTER

The X-C Computer is essentially a dead reckoning computer combined with a log sheet.

The following problems can be worked on the Computer:

1. Determination of Ground Speed being made good on a flight.
2. Flying time required to go a given distance, at a known speed.
3. Distance flown in a certain time, at a known speed.
4. Multiplication, division and proportion problems.
5. Fuel consumption problems.
6. Finding true air speed at different altitudes and temperatures.
7. Determination of true altitude above sea level.
8. Conversion of miles per hour to knots, or conversion of distance in statute miles to distance expressed in nautical miles.

The log sheet portion of the X-C is designed primarily for the pilot, who must devote most of his attention to flying and who must keep his navibation log as simple as possible. The log sheet is for keeping in orderly fashion that data essential for cross-country navigation, so that it need not be committed to memory or scrawled illegibly on a chart.

It is not a substitute for plotting boards, but between the hand-held computer and the plotting board. It comes complete with leg straps, pencil holder, freeing the pilot's hands for 99 per cent of the time and having his log sheet available when he wants it.

All you need in a plane is the X-C Computer and a sectional map.

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The book is written in simple language and so illustrated that any Physics instructor could easily teach the course.

"Elementary Physics" has been recommended as a text book by the Director of Ground School at the Army Air Forces Pre-Flight School at Ellington Field, Texas, and the Bureau of Public Relations, War Department, Washington, D. C., have approved the publication of this book.

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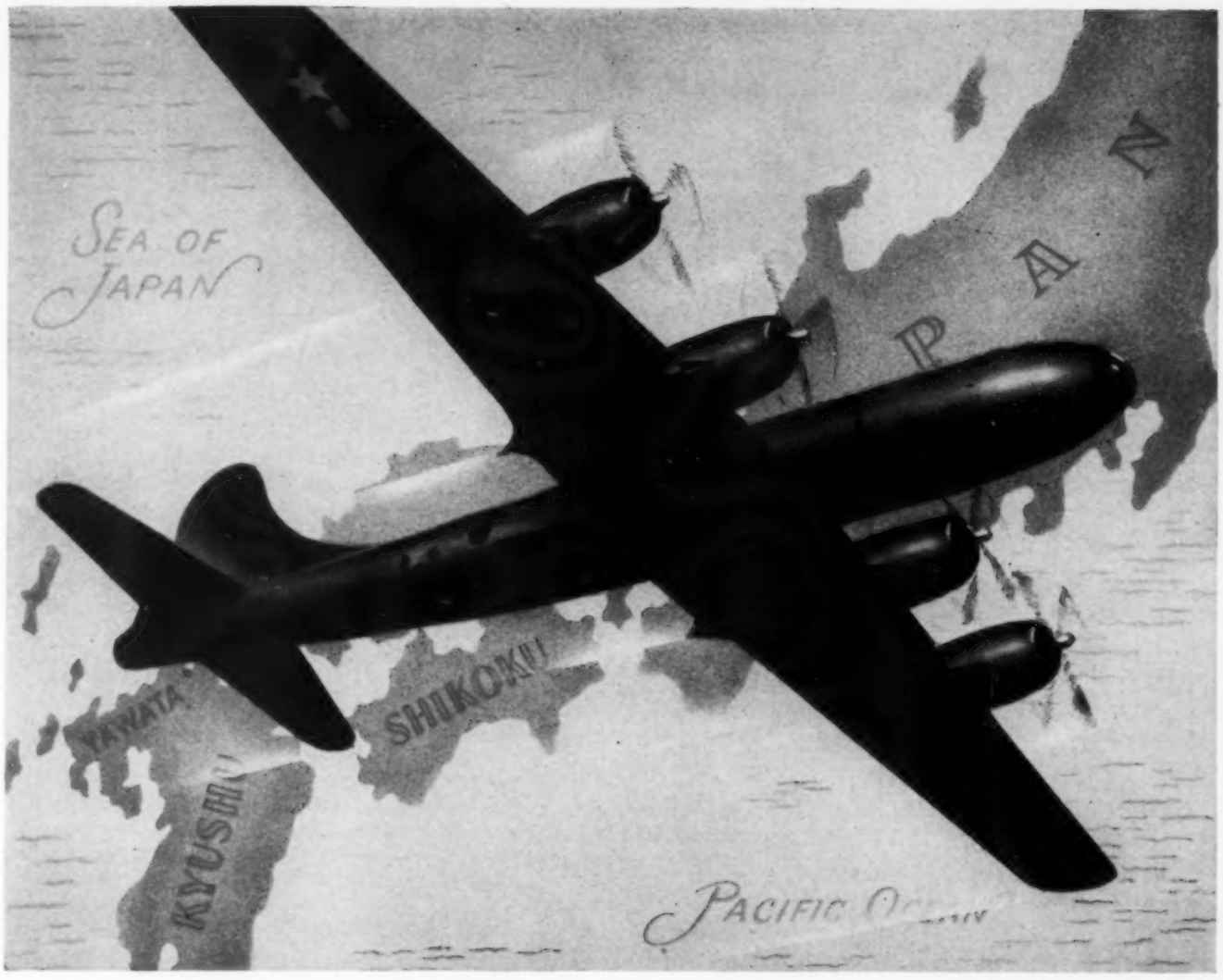

U. S. Army Air Forces Photo of B-29 Super-Fortress

FRIEND AND FOE

To all Americans, to the people of all Allied Nations, to the millions of oppressed citizens of occupied countries — the sleek and massive B-29 is a new and powerful friend. The thunder of its mighty Wright engines and the long, graceful sweep of its wings are a thrilling reminder that now more than ever the days of the Axis are indeed numbered.

To the perpetrators of this terrible world conflict — this same B-29 is a frightening, relentless foe. No spot on the face of this earth is beyond its reach . . . no power can prevent it from releasing its load of destruction exactly where and when it wants. In these quarters the B-29 is far from popular.

The men and women of CECO are proud and happy that the carburetors and fuel pumps they manufacture are a part of America's newest and greatest warplane. This is their most direct contribution to Victory.

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PROTEK-PLUGS

CHANDLER-EVANS CORPORATION SOUTH MERIDEN CONNECTICUT, U. S. A.

FORCED LANDING IN BRUSH COUNTRY holds no fear for Pilot Ned Henderson of the Border Patrol. He's shown here out of gas in terrain so thickly brushed a bulldozer had to cut a taxi-way to a tree-lined country road some distance away. There Henderson took off and made it back to base, with hardly a scratch of damage. The latest model Kellett autogiro can make jump take-offs without forward roll.—(U. S. Border Patrol Photo by Kelly S. Neal.)

AUTOGIRO ON PATROL

(Continued from page 23)

server's mind keeps the muddy banks adequately charted from day to day. When he spies unusual tracks, such as human footprints where none normally are found, or tracks left by boats being snaked into the water, he hovers, descends slowly and studies the scene carefully, tracing the course of the marks down one bank and up the other. If necessary, he can land on sandbars, of which the Rio Grande has many, or on the level banks, for the autogiro is capable of vertical descent landings within small areas surrounded by obstacles.

"Usually," he explained, "I radio to the nearest patrol car and direct them as near to the spot as they can drive, and then hover above while they come the rest of the way on foot to make the arrest." Then he demonstrated and we hovered at zero speed. The river is paralleled by a military road, running anywhere from a few hundred feet to a mile or so inland, from which paths frequently lead to the water's edge. Every inch is charted, mile after mile, and there is a car cruising at intervals to make the patrol chain complete.

How Arrests Are Made

"I've landed on a sandbar only once to make a catch," Henderson related. "That was when I observed two smugglers who had a slight—only slight, mind you—chance of getting past the auto patrol, which happened to be several miles down river. So I let her down easy on the bar, and my observer and I took custody of them right on the spot until the patrol car crew arrived and took them in tow. They were black market smugglers, and their chief booty was unrationed coffee. We climbed back into the 'giro and got out with ease, resuming patrol."

Most of the time Henderson just sits tight above the scene while ground patrolmen make their way from the military road. The hapless smugglers or aliens usually hide under a bush and are easily taken. Once three aliens traveling together were sighted by the 'giro in midstream. Henderson took up his sitting position above while the aliens hurriedly made for the American shore, carefully pulling their dinky little tin boat through the mud and into the bushes. Then they ran quickly to a little farm building, hiding inside as if safely across the border and waiting for the autogiro to take its leave. All Henderson had to do was radio to the nearby patrol car instructions to proceed to a certain white shack—the one with a ladder leaning against it, and make the catch. That's exactly what the Patrolmen did, going straight to their quarry and finding the lawbreakers huddled together in a corner, as harmless as kittens.

"It's a funny thing about smugglers and aliens," says Henderson. "They never turn back, even if I fly over in broad daylight and start circling. Once they're in the water they keep paddling for the American shore, with me sitting up there looking down their throats. Turtles, animals and birds scurry for safety when I fly over. But not the smugglers. They keep right on going—right into the hands of patrolmen who are usually waiting on the bank to arrest them after I begin calling on the radio. If they're smuggling contraband, they never want to throw it overboard. They hold onto it for dear life, and thereby preserve the evidence for their conviction in court."

If this makes the Border Patrol sound easy, we've led you astray. Henderson and older patrolmen have anything but an easy time of their job. It's hot along the Rio Grande in more ways than sunshine. Shooting, which breaks out now and then when the smugglers become desperate, hasn't involved the autogiro, chiefly because the odds are with it. But the patrolmen on foot and horseback figure in gunplay every now and then. And there's constant "war" on the Mexican side among the more criminal smugglers, just as there is within the ranks of most racketeers and thieves. The autogiro has spotted more than one body floating mysteriously down the silty Rio Grande, bearing mortal knife or bullet wounds. Now and then an alien seeking unlawful entry drowns. Many of those who are arrested after making their crossing often carry weapons, and the Border Patrol office is decorated with knives, pistols, rifles, clubs and other weapons confiscated from "wetbacks" — the general term applied to intruders who cross the river.

Contraband is usually destroyed by the officers, who keep photographs of the more sizeable catches. Henderson said some smugglers weight themselves down with such items as liquor, a single wetback carrying as many as thirty or forty bottles strapped, tied or bagged to his person. Sometimes a goat skin is used, being turned hair side inward to form a container into which bulk liquor can be floated across the river and then emptied into more convenient jugs—hair, odor, filth and all. Contraband is not the only commodity they seek to bring illegally into the United States. More often it is a man's labor—the aliens risk capture and prosecution merely to earn the high wages paid by citrus growers at harvest time.

One form of smuggling against which the Border Patrol takes special

(Continued on page 48)

POWER TO WIN

Daring observation pilots who direct artillery fire must coordinate quick thinking and quick action.

However, quick action requires highly maneuverable planes with responsive dependable power.

That is where dependable Continental Red Seal Engines come into the picture. Their tested and proved performance resulted in specifying this Power to Win in thousands of light aircraft, not only for observation but also for liaison, reconnaissance, medical relief, and to deliver supplies to those who had become marooned.

Continental Red Seal aircraft engines have been adopted as America's Standard.

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Buy War Bonds and Keep Them

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ARMY E NAVY

Awarded to the Detroit and Muskegon Plants of Continental Motors Corporation for High Achievement

SURPLUS AIRCRAFT DISPOSAL

(Continued from page 25)

Then why in the name of heaven doesn't the government turn over the entire job of surplus airplane disposal to the CAA, including the disposal policies, so that the spirit of Federal statutes will be carried out? Airmen trust the CAA because it is staffed by competent, intelligent airmen. It's just another case, however, of the New Deal circumventing law by the use of directives. The CAA is the goat. They have been ordered into the junk business against their will.

Little wonder that men who hoped for orderly disposal of surplus airplanes as a foundation stone for maintenance of a strong manufacturing industry, as a relief from the present acute shortage of civlian airplanes and a contributing factor to a healthy postwar market, are sorely disillusioned. Realistic airmen asked that all surplus equipment be returned to the original manufacturer for overhaul and reconversion prior to sale in the open market. Scores of approved repair stations have the facilities and manpower to contract for the same work.

But airmen have had little to say about the matter and as a result the market will be glutted with any and all kinds of flying junk that is sure to leave a tragic wake of accidents, financial ruin and people who, in disgust, will give up flying forever. Meanwhile on the sidelines, are the grasping junk dealers, biding their time, ready to step in and take over after legitimate pilots and operators absorb the losses. Worst of all, the boys at the fighting front are being sold down the river because the last remaining hope for getting into civil aviation when they return home will have vanished.

No matter where your interests lie in aviation, you will be affected materially by the surplus aircraft disposal policies of the United States Government, who can, through these policies, either make or break the industry. Surpluses can be handled in one way to contribute to the strengthening of aviation and its future development, or in another to wreck and undermine all of the gains made by the industry under the impetus of war contracts, expanded production and technical progress.

These are indisputable facts that must be reckoned with and acknowledged by every person sincerely interested in the future American aeronautics. Present trends of government agencies in handling surplus aircraft, if they continue, will produce chaotic conditions and seriously jeopardize the rich opportunity for creating a new, robust non-scheduled aviation industry in the immediate postwar years that's capable of absorbing thousands of returned veterans and contributing materially to the national wealth and security.

Talk with G. I. Joe and you'll find he doesn't want a dole when he gets back. He wants a job and an opportunity to get ahead. His pickings in commercial aviation will be mighty slim if SWPA keeps going in the present direction down the road of ignorance and shortsightedness, bent only on recovering a few measly dollars that might be written off as the cost of war. ★ ★ ★

AUTOGIRO ON PATROL

(Continued from page 46)

precautions is the airborne type. Airplanes used to be a real problem, especially during prohibition days. The furtive pilots would cross at highest possible altitudes, over remote areas. Clandestine fields on both sides of the border, usually located as far from the river as fuel and loads would allow, were used, but sooner or later as the smugglers flew inland they would land at public airports. A well-knit intelligence system as effective in the remote ranch lands as in the cities, usually proved the undoing of winged smugglers, and in at least one instance a load of airborne contraband—aliens—was captured when a Border Patrol car was steered into the path of the plane as it attempted a getaway takeoff.

In the early days of World War II, when German U-boats prowled the Gulf of Mexico and rubber boat landing parties were expected along the coast, Henderson's autogiro doubled as a warplane, scouting the beaches from Brownsville as far east as Corpus Christi. The Civil Air Patrol also guarded the Gulf out of Corpus, as did the Navy, and CAP pilots also operated a border patrol.

Now and then Henderson and his 'giro are called out on mercy missions and searches. Recently an Army P-40 from a nearby base lost its engine in the brushlands, and Army searchers couldn't spot it. Henderson found the missing Allison within three hours—but ran out of gas and had to land. He was miles from a clearing, and the terrain would have been a death trap for a forced landing in an orthodox plane. Instead of parachuting, Henderson settled elevator fashion without power—the autogiro, as implied by its name, is capable of autorotation and even under maximum load will settle vertically at a speed of only twenty-three miles per hour. Henderson radioed his position to a patrol car and plunked into a tangle of mesquite and underbrush so dense the Army had to retrieve him with a bulldozer, but the 'giro was hardly scratched. He filled the tanks and taxied out behind the bulldozer to a palm-lined country road and jumped the craft out, soaring up through the palms as if they weren't there.

All this talk about helicopters and roadable 'giros doesn't interest Henderson very much. "I reckon they'll be doing lots of things before long," he says. "Who can tell? Me, I'm too busy with wetbacks to worry about those things." ★ ★ ★

TPFA RENEWS ACTIVITIES

(Continued from page 40)

following subjects: Approval of an expanded Federal airport program; approval of CAA instead of OPA administration of aviation gasoline rationing if rationing is necessary for successful prosecution of the war; approval of revision and simplification of Civil Air Regulations; approval of beneficial and constructive state aviation legislation after the war is over when the returned airmen of the state can have a hand in its creation; condemnation of War Production Board Order L-48 that includes new propellers not necessary to the successful prosecution of the war; approval of a plan to expand aviation education in grade schools, high schools, universities and colleges of Texas; condemnation of the present surplus airplane disposal policies and approval of the CAA being given entire authority in establishing these policies; recommended the complete overhaul and recertification of all convertible airplanes before sale to the public and elimination of all junk from the market.

New officers elected were: Leslie R. Stringer, Wichita Falls, president; Dr. Tom V. Connor, Dallas, first vice president; Adolph Pfeffer, Houston, second vice president; George Haddaway, Dallas, secretary; Mrs. Charles F. Kolp, Electra, treasurer. Lt. Rod More, Corpus Christi, who is now on active duty in the Pacific theatre with the U. S. Navy, was elected to the newly established post of Military Governor in respect to the thousands of Texas private fliers now in the armed services. Twenty additional directors were elected, representing every geographical section of the state. Howard Smith of Dallas was convention chairman. Robert Ragsdale, Paul Hargis and Robert Burck were in charge of arrangements.

★ ★ ★

OPPORTUNITIES

for

Aircraft Engineers and Draftsmen

Here is an opportunity to join a successful, fifteen-year-old aircraft designing and manufacturing company that is currently engaged in a HELICOPTER development program for the armed services. Applications are being accepted for the following grades of engineering personnel:

CHIEF LINESMAN — Must have design experience in all-metal construction.

GROUP LEADERS — Body Group. All-metal experience essential. Mechanical, Power Plant, Flight Controls, Instruments and Furnishings, Electrical and Communications.

SENIOR and JUNIOR LAYOUT DRAFTSMEN—Engineering Lofting, Body Group, Mechanical, Power Plant, Flight Controls, Instruments and Furnishings, Electrical and Communications.

SENIOR and JUNIOR DETAIL DRAFTSMEN—For work in all groups. Experience in Aircraft Engineering is desired, but not essential. A thorough working knowledge of Mechanical Drafting is necessary for all grades above Detail Draftsmen.

ALL APPLICANTS MUST BE ABLE TO SECURE STATEMENTS OF AVAILABILITY

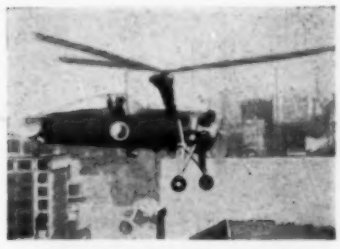
Send applications with complete details of your experience and qualifications to Dept. S, Kellett Aircraft Corporation, State Road and Lansdowne Avenue, Upper Darby (Philadelphia), Pennsylvania.

KELLETT

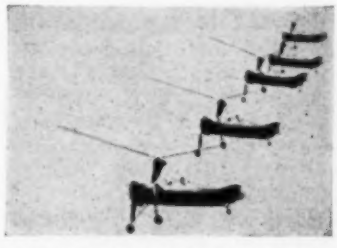
OLDEST ROTARY WING AIRCRAFT MANUFACTURING COMPANY

In 1933 a Kellett rotary wing ship accompanied Admiral Byrd on his South Pole voyage.

One of the Kelletts in Dept. of Agriculture tests, for Dutch elm disease scouting, 1937.



Eastern Air Line's Kellett flew for a full year from Philadelphia's post office roof, 1938.



A flight of 1938 U. S. A. A. F. Kelletts performing in training maneuvers.

Most recent Kellett development (1943) for the Army Air Forces—YO-60 type.

Kellett looks forward enthusiastically to a future of expanding service to the nation.

YOU ASKED FOR IT

What's your reaction to these proposed changes of Part 43, Civil Air Regulations, covering non-air carrier operation rules? Send your reactions to the Civil Aeronautics Board, Washington, before Sept. 1, 1944.

FAR-REACHING, unprecedented and thought-provoking changes are proposed by the CAB Safety Bureau in their third installment of the series to revise and rearrange those Civil Air Regulations that affect the private and commercial pilot. Parts 20 and 60 have already been circulated and re-published in these columns for your response; it's the hope of the Safety Bureau that you will follow through on these suggested changes relative to Part 43. Your particular attention is directed to proposals for renewal of annual certification of aircraft by the proper class mechanic, private pilots flying passengers with operative dual controls, elimination of check flight if pilot hasn't flown in preceding six months, and creation of a new designation for personal aircraft never used commercially which would not be subject to all the restrictions and limitations applicable to commercially used aircraft identified by NC. The new designation would be NP aircraft. Logbooks would not be required and minor repairs or alteration work would be performed by the pilot-owner if he desired. NP aircraft could not carry people or property for hire.

The CAB invites your suggestions, criticisms and ideas concerning these changes. Following receipt of all comments, the Safety Bureau will submit the final version of all three Parts, 20, 43 and 60, for final consideration before submitting them to the CAB with recommendation for adoption.

Suggested revision of Part 43 follows:

43.0 *General.*
43.1 *Aircraft certification and indentification.*
43.2 *Maintenance of certificated aircraft.*
43.3 *Aircraft equipment.*
43.4 *Operating rules (general).*
43.5 *Student Pilot limitations.*
43.6 *Private and Commercial Pilot limitations.*

43.0 *General.* The following rules govern the operation of non-air carrier civil aircraft in the United States. (Public aircraft including military aircraft are not considered civil aircraft.)

43.1 Aircraft Certification and Identification

43.10 *Certificates and indentification marks.* Aircraft, except foreign aircraft authorized by the Administrator to be flown in the United States, must not be operated unless the following requirements are met:

43.100 *Registration Certificate.* A Registration Certificate issued to the owner of the aircraft must be displayed in the aircraft at all times. (For rules governing the Registration and Recordation of Ownership of aircraft see Administrator's Regulations 501 and 503.)

43.101 *Identification marks.* Aircraft identification marks must be displayed on aircraft in a manner prescribed by the Administrator. They are as follows:

(a) *NC.* An aircraft which has fully complied with the minimum airworthiness requirements specified in the Civil Air Regulations must display the Roman capital letters NC followed by the registration number.

(b) *NR.* An aircraft which the Administrator has found to be safe for restricted operations must display the Roman capital letters NR followed by the registration number.

(c) *NX.* An aircraft which the Administrator has found to be safe for experimental operations must display the Roman capital letters NX followed by the registration number.

(d) *Other marks or symbols.* No other design, mark, or symbol which modifies or confuses the identification mark may be placed on aircraft, except with the approval of the Administrator.

43.1010 *Export aircraft.* An aircraft manufactured in the United States for delivery to a foreign purchaser may display such marks or insignia as the appropriate foreign government designates. Such aircraft may be operated only for the purpose of test flights and demonstrations for a limited time or for delivery to the foreign purchaser.

43.102 *Airworthiness Certificate.* An Airworthiness Certificate or special authorization, issued by the Administrator, approving its operation must be carried in the aircraft at all times during flight.

Note: As a general rule, the manufacturer obtains the Airworthiness Certificate which thereafter remains with the aircraft. If no Airworthiness Certificate has been issued for the aircraft, or if it has expired, the owner must obtain this Certificate.

43.1020 *Aircraft Operation Record requirements.* An aircraft must not be operated unless there is attached to the Airworthiness Certificate the appropriate Operation Record issued by the Administrator and it must be operated only in accordance with the limitations prescribed in such record. Any change which affects the limitations set forth in the Operation Record must be made under the supervision of an appropriately rated mechanic or other person authorized by the Administrator and such change must be noted in the Operation Record.

43.1021 *Duration.* An Airworthiness Certificate, unless recalled by the Administrator within ninety days after date of issuance, will expire twelve months after the date of issuance or date of last renewal unless the holder thereof secures an examination or inspection of the aircraft by a person authorized by the Administrator and such person renews the Airworthiness Certificate.

43.1022 *Transferability.* The Airworthiness Certificate and the attached currently effective aircraft Operation Record, upon transfer of ownership, must remain with the aircraft for which they were issued.

43.1023 *Surrender.* Upon the cancellation, suspension, or revocation of an Airworthiness Certificate the owner of the aircraft must, upon request, surrender such certificate to an authorized representative of the Administrator.

43.2 Maintenance

43.20 *General.* An aircraft must not be operated unless it is in airworthy condition.

43.21 *Periodic Inspection.* An aircraft must not be operated unless within each 100 hours of flight time it is given a periodic inspection and is found to be airworthy by an appropriately Certificated Mechanic. This inspection must be made in accordance with the periodic aircraft inspection report form furnished by the Administrator. (To be modified later in accordance with new Part 24.)

43.22 *Aircraft and engine logbook.* The registered owner must keep an accurate, current, permanent record of the operating history of the aircraft and each engine installed therein. This record must contain the total flight time of the aircraft and running time of each engine. Such records must be kept in logbooks or other suitable system readily available for transfer with the aircraft or engine and, upon request, must be presented to an authorized representative of the Administrator or Board.

43.23 *Rebuilt engine logbook.* A new record without previous operating history may be used for an aircraft engine rebuilt by the manufacturer provided such new record contains a signed statement by such manufacturer giving date engine was rebuilt and such other information as the Administrator may require.

43.3 Aircraft Equipment

43.30 *Airplane equipment.* Airplanes which are certificated as NC aircraft must have at least the following equipment:

(a) *Day contact flight.*
- (1) an airspeed indicator;
- (2) an altimeter;
- (3) a tachometer for each engine;
- (4) an oil-pressure gauge for each engine;
- (5) a liquid thermometer for each liquid-cooled engine;
- (6) an oil thermometer for each air-cooled engine;
- (7) a manifold-pressure gauge, or equivalent, for each altitude engine;
- (8) a fuel quantity gauge indicating the amount of fuel in each tank;
- (9) certificated safety belts for all passengers and members of the crew;
- (10) a portable fire extinguisher of an approved type;
- (11) position indicator if aircraft has retractable landing gear;

(Continued on page 52)

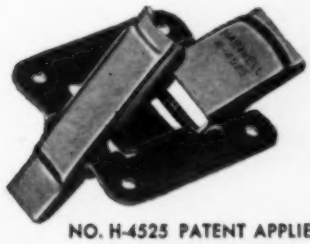
Fast Delivery on Hartwell Forged DURAL Fittings

We are now equipped to give you speedy delivery on *forged* DURAL hose fittings of the AN842 and AN844 series, in thread diameters of ¼" to 1½", inclusive. Accurately machined, all thread tolerances, i. d. and o. d. dimensions are closely held.

In addition, we are manufacturing DURAL bulkhead hose fittings—AN846, 848, 849—in thread diameters of ½" to 1½", inclusive. Designed for pressurized cabins, these fittings provide thread relief space to permit the tightening of locknuts against thin bulkhead partitions.

NEW HARTWELL LATCH

CUTS PLANE INSPECTION TIME. This new Hartwell latch ends the slow removal and replacement of inspection doors. Pressure on the trigger releases the latch. Pressure on the bolt locks it in place. Where multiple installations are used, as shown above, the Hartwell latch can be used without a hinge.



NO. H-4525 PATENT APPLIED FOR

APPROVED BY ARMY AIR FORCES. Simple and rugged in construction, the new Hartwell latch has the approval of Army Air Forces. It weighs less than ⅓ oz., and fits flush when installed. It can be used on inspection doors of any size or shape.

Single source for 779 different aircraft production parts and tools

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YOU ASKED FOR IT

(Continued from page 50)

(12) a device for measuring or indicating the amount of oil in each tank;

(13) a magnetic compass;

(14) a first-aid kit; and

(15) approved flotation gear for each occupant and a Very pistol or equivalent signal device if the aircraft is operated for hire over water beyond gliding distance from shore without the aid of power.

(b) *Night contact flight.*

(1) the equipment specified in §43.30 (a);

(2) a set of certificated standard forward position lights in combination with a certificated tail light;

(3) one electric landing light for aircraft of less than 1,500 pounds maximum weight and two such lights for aircraft of 1,500 pounds maximum weight or over, if the aircraft is operated for hire;

(4) certificated landing flares as follows, if the aircraft is operated for hire beyond a 3-mile radius from the center of the airport of take-off:

(i) five class-three flares or three class-two flares for airplanes of 3,500 pounds maximum authorized weight or less,

(ii) four class-two flares for airplanes of between 3,500 pounds and 5,000 pounds maximum authorized weight,

(iii) two class-one flares or three class-two flares and one class-one flare or four class-two flares for airplanes of 5,000 pounds maximum authorized weight or more;

(5) a storage battery adequate as a source of energy supply for such lights and radio as are installed;

(6) an adequate radio range and weather broadcast receiver permitting continuous reception of signals or broadcasts if the aircraft is operated in a control zone; and

(7) one spare set of fuses or three spare fuses of each magnitude, whichever is less.

(c) *Instrument flight.*

(1) the equipment specified for contact flight in §43.30 (a) and (b);

(2) a radio transmitter operating on 3,105 kilocycles to permit communication at a distance of at least 100 miles and a radio receiver capable of receiving radio range and weather broadcasts;

(3) a gyroscopic rate-of-turn indicator. (All air-driven gyroscopic instruments must derive their energy from a suction air pump driven either by an engine or an auxiliary powerplant unit);

(4) a bank indicator;

(5) a rate of climb indicator;

(6) a sensitive altimeter adjustable for change in barometric pressure and compensated for changes in temperature;

(7) a clock with a sweep second-hand; and

(8) a generator of adequate capacity.

43.4 Operating Rules (General)

43.400 *Definitions.*

(a) *A Pilot* is a person holding a valid Pilot Certificate issued by the Administrator.

(b) *To pilot* or *piloting* means to command or be in charge of the aircraft when it is being operated in flight.

(c) *Passenger* is an occupant of the aircraft in flight other than a crew member.

43.401 *Pilot Certificate.* Any person piloting an aircraft in the United States must hold a valid Pilot Certificate issued by the Administrator or a Foreign Pilot Certificate validated by the Administrator.

43.402 *Periodic physical examination.*

Note: The rules covering periodic physical examination will be placed in this section after it has been decided what the physical requirements shall be in connection with the issuance of Pilot Certificates in the proposed Part 20.

43.403 *Pilot logbooks.* Every Pilot and every person receiving flight instructions must keep a current permanent record of his flying time in which the entries with respect to dual instruction are certified to by his Instructor. Such records, upon request, must be submitted to an authorized representative of the Administrator or Board, or to Public Officers enforcing local regulations or laws.

43.4030 *Contents.* The logbook must contain the following information:

(a) the date of flight;

(b) the type, make and model of aircraft flown, the airplane class and horsepower;

(c) the aircraft Identification Mark;

(d) a notation of dual instruction, solo, instrument, and night flying time; and

(e) the duration of flight and the points between which such flight was made.

43.404 *Logging of flight time.*

(a) *Student Pilot.* A Student Pilot may log as solo only that time during which he is the sole occupant of an aircraft in flight.

(b) *Pilots of Private Class or higher.* A Pilot of Private Class or higher may log as solo that portion of any flight during which he is the sole manipulator of the controls of an aircraft for which he is rated or any flight during which he is the sole occupant of the aircraft. A Flight Instructor also may log as solo all that flight time during which he is serving as Flight Instructor.

(c) *Instrument time.* Instrument flight time may be logged as such by the Pilot actually manipulating the controls and only when the aircraft is flown solely by reference to instruments either under actual or simulated instrument flight conditions approved by the Administrator.

43.405 *Recent experience requirements.*

(a) *Passenger flight.* A Pilot must not pilot an aircraft carrying any passenger unless, within the preceding three calendar months, he has made and logged at least five take-offs and five landings to a full stop in an aircraft of the same type and class.

(b) *Instruction flight.* A Flight Instructor must not give flight instruction unless within the preceding twelve calendar months he has either:

(1) given at least ten hours of flight instruction while appropriately rated, or

(2) passed such practical flight test as the Administrator finds necessary and appropriate to demonstrate continued proficiency.

(c) *Night flight.* A Pilot must not take off or land an aircraft carrying passengers during the period from one hour after sunset to one hour before sunrise unless he has made and logged at least five take-offs and five landings to a full stop during such period within the preceding three calendar months.

(d) *Instrument flight.* A Pilot who within the preceding six calendar months has not flown and logged at least two hours of flight time solely by reference to instruments either under actual or simulated instrument flight conditions approved by the Administrator must not pilot an aircraft under instrument conditions until he has logged at least two hours of such flight time under:

(1) simulated instrument conditions, accompanied by a Pilot of at least Private Class holding an appropriate aircraft rating, or

(2) actual instrument conditions, accompanied by a Pilot of at least Private Class holding an appropriate aircraft and instrument rating.

43.406 *Use of liquor, narcotics, and drugs.* A Pilot or member of the aircraft crew in flight must not be under the influence of, or use intoxicating liquor or any drug which affects his faculties in any manner contrary to safety. A Pilot must not permit any person to be carried in the aircraft who is obviously under the influence of intoxicatnig liquor or drugs, except a medical patient under proper care or in case of emergency.

43.407 *Towing by aircraft.* A Pilot must not tow any object by aircraft unless authorized by the Administrator.

43.408 *Dropping objects or things.* A Pilot must not permit any object or thing to be dropped from an aircraft in flight except fine sand, small lead shot, fuel, or water, all unconfined, unless authorized by the Administrator.

43.409 *Acrobatic flight.* A Pilot must not intentionally fly an aircraft in acrobatic flight:

(a) carrying a pay passenger;

(b) carrying any other person unless all occupants are equipped with certificated parachutes; or

(c) carrying any person seated at operative dual controls other than a Private or higher class Pilot or a student receiving instruction.

43.410 *Parachutes.* The Pilot must not permit other than a certificated parachute that has been packed within the preceding sixty days by a Certificated Parachute Rigger to be carried in the aircraft in a manner available for emergency use.

43.5 Student Pilot Limitations

43.50 *General limitations.* A Student Pilot must not pilot an aircraft carrying a passenger and must not pilot aircraft for hire or reward or in furtherance of a business.

43.51 *Requirement for first solo.* A first solo flight must not be made until the Student is found competent by a Flight Instructor to make such flight and authority therefor has been endorsed by such Instructor on the Student Pilot Certificate.

43.52 *Flight area limitations.* A Student Pilot must not pilot an aircraft outside a local flying area designated by his Flight Instructor in the vicinity of his operating base until:

(a) he has logged at least ten solo flight hours;

(b) he has passed the written examination required in Part 20 of the Civil Air Regulations for cross-country flight; and

(c) his Student Pilot Certificate has been appropriately endorsed by a Flight Instructor.

43.53 *Aircraft limitation.* A Student Pilot must not pilot an aircraft other than that of the type, class, and horsepower range which has been endorsed on his Student Pilot Certificate by a Flight Instructor.

43.54 *Recent experience.* A Student Pilot who has not piloted an aircraft within ninety days must not pilot aircraft in solo flight until he has passed a satisfactory flight check given by a Flight Instructor and that fact has been endorsed by such Instructor on the Student Pilot Certificate.

43.6 Private and Commercial Pilot Limitations

43.60 *Private Pilot.* A Private Pilot must not pilot aircraft for hire or reward or in the furtherance of a business, except as incident to his own transportation.

Note: The sharing of expenses incurred during flight is permitted under the terms of this section.

43.61 *Commercial Pilot.* A Commercial Pilot may exercise the privilege of a Private Pilot and in addition may pilot aircraft carry-

ing passengers or property for hire or reward or in furtherance of a business.

43.62 *Airline Transport Pilot.* A Transport Pilot may exercise the privileges of a Commercial Pilot with an instrument rating.

43.63 *Rating Record Requirements.* A Private or higher Class Pilot must not pilot an aircraft unless there is attached to his Pilot Certificate the appropriate Rating Record issued by the Administrator, and he must not pilot any aircraft carrying passengers otherwise than in accordance with the aircraft rating limitations set forth in his Rating Record.

Note: 43.63 does not permit a Pilot who by reason of § 29.2 has been limited to the operation of a particular make or model of aircraft or a general type of aircraft to operate other makes or models or other general types.

43.64 *Flight instruction limitations.* The following rules govern flight instruction:

43.640 *Aircraft.* Aircraft operated in flight instruction must be equipped with fully functioning dual controls.

43.461 *Flight time.* A Flight Instructor must not give more than thirty-six hours of dual flying instruction in any seven-day period.

43.642 *Instructor Competency.* A Flight Instructor may at any time be required to demonstrate continued proficiency to give flight instruction by passing a practical test prescribed by the Administrator.

43.65 *Instrument flight limitations.* A Pilot must not pilot aircraft under instrument flight rules unless he holds a valid instrument rating issued by the Administrator or a valid military instrument rating issued by his Service.

43.66 *Instrument instruction.* Instrument flight instruction may be given only by a person holding a valid instrument rating. A Flight Instructor Rating is not required.

43.67 *Simulated instrument flight.* Aircraft must not be flown under simulated instrument flight conditions unless:

(a) fully functioning dual controls are installed in the aircraft;

(b) an appropriately rated Pilot occupies the other control seat as safety Pilot; and

(c) such safety Pilot at all times has adequate vision forward and to either side of the aircraft, or a competent observer occupies such a position in the aircraft that his field of vision adequately supplements that of the safety Pilot.

SKY'S THE LIMIT

(Continued from page 42)

they will let us land our airplanes there when this is over? I don't — unless we take a much stronger stand on it than we have yet.

We personally feel that too many of our diplomatic policies have failed miserably. We pay; the problems are not solved; we don't have friends; the American people and American companies get little or no help from our government in foreign lands. Examples: Mexico expropriated most of the oil properties down there. After five years of bickering the Mexicans pay 10 per cent of the value — mostly in promissory notes. Japan took over Chinese territory and concessions of many American companies — We wrote 'em some notes. Bolivia took away all our tin concessions and properties of several of our companies. We did nothing except refuse to recognize 'em. Several other countries are or have been doing things to us — and we don't pay much attention to them, except hand them some more lend-lease to keep 'em liking us. We sold the Japs and Germans oil and gasoline and junk iron and steel to fight us with. That was State Department diplomacy.

What it all amounts to with us, is this: We don't think that people—or nations—change much. We think we can expect a lot more of the same. We think the United States of America should adopt a strong policy to protect its own rights first, last and always. Let's have done with this business of getting the small end of every deal, meanwhile paying through the nose for it. Let's insure that our delegates to any peace conferences and postwar settlement congresses go there with strong demands—that we get our views properly presented—with vigor **and backing.** ★ ★ ★

by
CHARLES A. ZWENG
Author of
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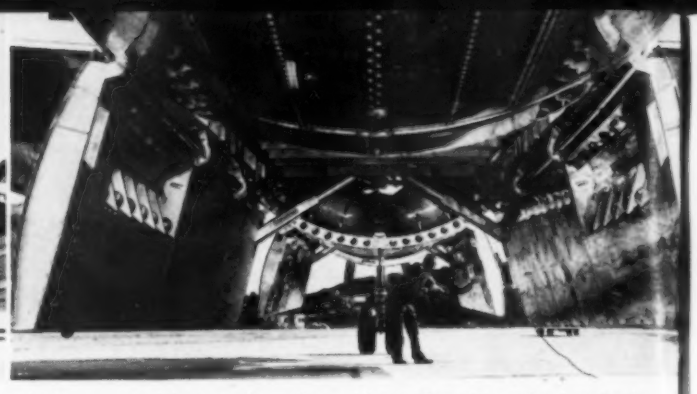


DOUBLE BOMB BAYS pose a problem for the B-29 in that one bay can't be emptied before the other without disturbing the bomber's level of flight. But Boeing engineers designed a mechanism which drops a bomb alternately from one bay and then the other, thus maintaining balance. Exact bomb capacity is still restricted.—(Boeing Photos.)

AIR POWER
In Action

By TOM ASHLEY

FIRST it was the Stuka to dominate the air war's operations during World War II. Then the fighter gained the spotlight in the Battle of Britain. Eventually the heavy bomber reigned supreme in the European theatre. Of late the fighter-bomber has shared the heavy's glory. But now the time is at hand when another star will dominate the air war stage in Europe—a performer once abandoned by the U. S. Army Air Corps.

We refer to the attack plane. Perhaps we should say attack "aviation," referring to the tactic rather than the plane, for in these days of compromise and improvisation fighters, dive-bombers, medium bombers and even heavies are frequently diverted from their most effective employment to undertake attack aviation's highly specialized mission. It doesn't matter what you call the planes, they perform attack aviation whenever they are operated to destroy enemy troops and materiel on and near the battlefield, particularly if they operate at low level.

Attack aviation has not been displayed in all-out effective action before now, although the 14th Army Air Force in China, despite its orphaned status, has managed to provide the nearest thing to it. In the Pacific we have either been without adequate equipment and supplies, or else the terrain has been unsuited (such as small islands and jungles). In Africa we were in the fighter-bomber stage of battlefield aviation. Terrain prevented a war of rapid armored movement and maneuver in Italy.

But in France, as predicted in this column a month ago, the Allied effort is assuming blitz proportions surpassing anything ever displayed by the Germans at their best, and behind our armored successes there will be found the devastating punch of attack aviation.

A brief reference to military aviation history will furnish a more appreciative understanding of attack aviation, which was conceived and developed by the United States and copied by others (notably the Russians, who misled many to believe the Stormovik represented an exclusive Soviet tactic). It is a product of the old Third Attack Group, which started out in 1921 with the simple idea of specializing in strafing ground troops with flying machine guns. As time passed it added para-frag antipersonnel bombs, and finally chemicals. No other air branch, including pursuit, could match the skill and precision developed by the Group. As a news writer we frequently flew with that pioneering unit, and there were times when its fifty-four planes—those of the 8th, 13th and 90th Squadrons—literally clipped the grass with their props while skimming the terrain at zero altitude and in close formation, flying so incredibly low they had continually to dodge farm fences, bushes and trees and farm buildings. Behind those objects the massed strafers of the Third Attack Group could approach a target out of sight and inaudible until less than a thousand yards away, so close their machine gun fire furnished the first warning as the bullets struck home. Thus disabling the "enemy," the attack planes would blanket the target with small bombs and race beyond range before ground defense could be offered effectively.

But aeronautical and ground army progress brought weaknesses to attack aviation. The planes were too

LOSSES IN THE AIR WAR
June 25-July 25, 1944
(Does Not Include Probables or Damaged Totals)

	Europe		Italy		Southwest Pacific		Russia*
	Enemy	Allied	Enemy	Allied	Enemy	Allied	Enemy
June 26	....	1	76	44	....	2	34
June 27	29	33	38	6	....	....	61
June 28	27	26	23	6	9	1	71
June 29	11	9	3	8	7	....	29
June 30	....	18	14	9	4	....	46
July 1	9	5	7	4	8	1	35
July 2	22	3	73	43	....	....	15
July 3	10	2	1	....	4	1	29
July 4	3	47	17	6	5	....	19
July 5	39	24	3	11	....	....	22
July 6	12	9	10	17	1	1	25
July 7	117	76	51	27	....	....	34
July 8	30	17	57	21	2	1	43
July 9	12	14	14	9	2	....	64
July 10	1	26	....	1	....	....	77
July 11	....	....	....	4	2	3	29
July 12	9	26	14	20	6	....	15
July 13	14	27	....	19	....	....	21
July 14	32	8	11	1	3	1	46
July 15	11	17	10	24	4	1	66
July 16	....	15	44	22	4	1	94
July 17	14	9	4	7	....	....	42
July 18	18	84	66	19	11	2	34
July 19	59	25	7	25	....	....	43
July 20	14	70	17	15	1	....	78
July 21	22	46	12	23	....	....	69
July 22	....	2	5	28	3	1	66
July 23	....	6	56	7	9	....	36
July 24	....	27	6	7	4	1	36
July 25	37	39	65	26	2	2	35
TOTALS	552	711	704	459	91	19	1314
Totals Since Jan. 1	5312	4832	3122	1850	1699	262	8200

*RUSSIA: Does not reveal own losses.
CHINA: Two hundred nineteen enemy planes destroyed at loss of thirty-four. Totals since January 1, 451 enemy, 95 Allied.
PACIFIC: One hundred twenty-eight enemy planes destroyed at loss of twenty-four. Totals since January 1, 1,570 enemy, 243 Allied.
SOUTHEAST ASIA: Twenty-four enemy planes destroyed at loss of sixteen. Totals since January 1, 371 enemy, 158 Allied.
MIDDLE EAST: Six enemy planes destroyed at loss of six. Totals since January 1, 58 enemy, 69 Allied.
EAST EUROPE: Thirty-eight enemy planes destroyed on July 25 at no loss. Those were Fifteenth Air Force fighters operating from Russian bases in the Polish sector.
(NOTE: These figures are compiled by SOUTHERN FLIGHT from daily headquarters communiques issued by the respective commands. They are therefore subject to periodic adjustment. Dates for Southwest Pacific are those on which figures are released; others when action occurred.)

slow and short-ranged. And at that stage a significant development occurred. Seeking speed and range for attack, the Army ordered thirteen Curtiss YA-18 twin-engined attack planes —fast, heavily armed planes. They failed to pass Third Attack Group field trials because they proved too much airplane for a lone pilot to fight with so close to the ground. "Baby bombers",the Third's specialists called them. But the Army was still strong for high-speed, twin-engined attack planes, and the YA-18 was followed by the Douglas A-20, the North American B-25, a Glenn L. Martin design which ultimately became the B-26, and various others which failed to make the grade. That was the end of attack aviation as the pioneers had practiced it, and the birth of medium bombardment as a powerful new branch of U. S. combat aviation. The Third Attack Group was split into new units in the 1939-40 expansion and its brilliant leaders were scattered about the globe in subsequent moves to build the world's largest air force.

Aircraft cannon and rocket guns have done what the Third Attack Group could not achieve. These weapons have eliminated maneuverability as the primary requirement for attack aviation, and speed has protected the flanks and rear of ground-strafing planes as they approach and leave the target. Thus heavily armed Allied fighters and medium bombers are able to drop from medium altitude to zero level and effectively destroy such formidable targets as flak towers, armored trains, tanks and other strong ground defenses. This is not dive-bombing or medium bombardment or something "new." It is attack aviation, an old and original American innovation operating in new dress.

When it comes to out-blitzing the Germans in armored warfare, the Allies will call upon attack aviation to bottle up Nazi panzers. Front dispatches will soon be describing gargantuan "traffic" jams behind the enemy lines in France. These will result when low-flying planes tie up German columns by destroying bridges, service and transport vehicles at the rear while Allied armored units apply frontal pressure. Mechanized warfare is weakest when armored units are forced to retreat, and even minor traffic jams can lose battles. When overwhelming attack aviation force is applied to create major traffic jams, the German retreats will become holocausts of destruction and death. It is both possible and probable that Allied armored offensives, aided by tremendous odds in the air, will drive Eastward to Germany with a speed difficult to believe. Our tank units should be capable of covering great distances in a matter of hours rather than days or weeks, for attack aviation will blaze the trail as the most destructive spearhead ever known to ground warfare. ★ ★ ★

The WORLD'S WINGS

By LUCIEN ZACHAROFF

De Gaulle's visit to Washington, our invasion of the Continent, and several other recent signs point to an early restoration of France as a major power. Hence, her attitudes on postwar international aviation are to be taken seriously. But what are these attitudes?

FRANCE'S AIR VISIONS

France's authoritative spokesman is General M. Valin who heads the **Mission de l'Air** in London, a position which makes him commander-in-chief of the Fighting French Air Forces in Europe. He recalls his country's prewar status in the world air traffic, the "immutable characteristics of her geographical position," and "her role in history". On the strength of these, France must come to the fore as a leader "in the development of a network of air routes in Europe".

Nor is Valin overlooking the French holdings in Africa and Asia which create the "vital necessity" of air routes between the mother country and these possessions.

The chief of de Gaulle's aviation acknowledges that France's war-devastated resources are not commensurate with the magnitude of the projected program. First must come economic reconstruction.

Liberated France will favor increasing international co-operation premised on close integration of the factors of peace and prosperity. Valin would place France unreservedly behind a world program which gives priority to economic action designed to reverse the prewar doctrines of expansionism, prestige, and the rest which plagued Europe's peoples with financial burdens, economic crises, and the ultimate global disorder of war.

Economic sanity, says Valin, demands a sensible decision on the frequency of services on agreed routes of the major European nations. What will become of the Continent's rebuilding if the peace-making statesmen fail to strike a relative balance between the traffic volume and the capacity provided by the air carriers? Valin warns against cutthroat commercial competition and struggle for political prestige which would place an unbearable financial burden on Europe's Man in the Street.

No wishful thinker, Valin remembers how in 1931-32, at the Disarmament Conference, his country had prematurely urged internationalization of the whole civil aviation of Europe. Today he anticipates "a progressive and carefully calculated diminution of the principle of air sovereignty". Therefore, revision is in order of the **Convention Internationale de la Navigation Aerienne** of 1919.

On the basis of principles yet to be determined, France is likely to "come to terms with the most liberal elements among the political leaders of the United States and England". In disposing of the knotty problem of this planet's airways, the Fighting French authorities would favor an international board for the organization and regulation of a global network, it has been reliably hinted.

★ ★ ★

Nazi Planes Equip Turk Airlines — Rolls-Royce Engines Power Canada's DC-4's — Enemies Compete at Portugal Air Show

International air authority is also favored by Britain's influential Labour Party. . . . The House of Lords has been spending many weary hours debating postwar civil aviation. . . . Many U. S. planes arriving in Russia are modified with increased armor and larger caliber armament. . . . The Red Air Force has been increasingly undertaking long-range missions far behind the German lines, often "favoring" the enemy rail concentrations. . . . A forewarning against the Nazi robot aircraft came as early as May 11th when a radio-controlled plane carrying two magnetic mines crashed in South Sweden. . . . Turkey's domestic airlines have been receiving Junkers Ju 52/3m transports. . . . Among the hundreds of hostages shot in Rome by Axis executioners were two top-flight air generals—Lordi and Martelli. . . . Brazilian airmen have been operating with the Allies in Italy. . . . There are several Fighting French paratroop regiments. . . . Canada-built DC-4's are powered by Rolls-Royce Merlins. . . . Canadian officialdom is much interested in discussing postwar air agreement with the Kremlin. . . . Portugal's Air Display of more than 200 aircraft types featured British, German, and American types. . . . A twin-engined low-wing monoplane, the KZ IV, has been designed and flown in Denmark; it's a light specimen.

Packard's New Military Engine Program Seen As Bid for Postwar Aviation Activity

An advanced engine development division will be added to the Toledo plant of the Packard Motor Car Company at the request of the Army Air Forces Materiel Command, Geo. T. Christopher, Packard president and general manager, announced recently. Work on the new facilities which will include latest design dynamometer cells, propeller test stands and special machinery to simulate highest attainable altitude conditions is now under way, Christopher stated. C. R. Paton, former Packard chief engineer, will serve as directing engineer for the development program, for which the Defense Plant Corp. recently increased its contract $1,350,000. It was emphasized that current production of Rolls-Royce aircraft and Packard marine engines in the Detroit and Toledo plants will be kept separate from the new project, and that development work would not be confined to the Rolls-Royce engine. Col. J. G. Vincent, Packard vice president of engineering, will supervise creative work, and the creative work already established at the Detroit factory by Vincent would be transferred to the new Toledo division. R. R. Rees, original manager of the Toledo plant, will continue direction of all manufacturing and assembly, tear-down and reassembly work for the experimental engine program.

Observers believe Packard plans to stay in the aircraft engine business after the war. The firm's announcements have emphasized its interest in engines of "higher power" and "lighter weight." Packard is recognized as having accomplished much in adapting the Rolls-Royce to American mass production methods, one of the most difficult problems in the entire war production picture.

Aircraft Output in July Drops to 8,000; Heavy Bombers Gain

Aircraft production during July totalled 8,000 planes, according to announcement by C. E. Wilson, executive vice chairman of the War Production Board. The figure was forty-nine planes lower than June's output and 902 planes fewer than were produced during May.

Heavy bomber production during July, while not being detailed, was described as ahead of schedule, chiefly in the B-29 program, which is being expanded steadily. Cutbacks in trainers and some types of fighters have accounted for most of the reduction in the past, and conversion of facilities for these types to the output of heavier planes is not expected to boost the total output for some time yet.

Aircraft Council Liaison Representative Aids AAF in Termination Problems

R. D. Campbell of the Curtiss-Wright Corporation has been named as the Aircraft Manufacturers' Council's permanent representative at the AAF Materiel Command headquarters in Dayton, Ohio, as a result of arrangements between the Materiel Command and the Council for close co-operation in contract termination problems. Campbell will serve in a liaison capacity between the aircraft manufacturers and the Materiel Command, calling in various experts in industry to work out termination problems with the AAF's new Readjustment Division, headed by Col. E. W. Rawlings. The agreement followed a conference between a manufacturers' delegation, headed by John C. Lee, and Maj. Gen. Bennett E. Meyers, who commands the Materiel Command.

Aero Chamber Studies International Uniformity in Airworthiness Requirements

Plans for international uniformity in airworthiness standards to permit freedom in movement of aircraft from one country to another were scheduled for discussion by members of the Airworthiness Requirements Committee of the Aeronautical Chamber of Commerce in August. Conditions covering admission of foreign aircraft into the United States for sale to private purchasers and regulation standards for foreign airlines operating into and within this country were also to be considered. The Western Division of the Committee is to meet in Hollywood, Calif., under the chairmanship of R. L. Schleicher of North American Aviation Corporation, and members of the Eastern Division in New York City, with J. F. Gerteis, Cessna Aircraft Company, and Eastern Division manager, presiding.

Voluntary Rebates, Price Reductions by Industry Save U. S. Many Millions

Over $100,000,000 was returned to the United States Government during 1942 and 1943, a large portion in voluntary rebates, by member companies of the Aircraft War Production Council, East Coast, Inc. In addition to the sums returned to the government on previous aircraft production due to increased production efficiency, large savings were effected by scaling down purchase price of many airplanes as much as fifteen to thirty-five per cent, the Council stated. A large number of the member companies' contracts, originally negotiated on a fixed fee basis, were changed to a fixed price basis as manufacturing experience permitted more accurate determination of the actual costs of production. The fixed fee basis was adopted at first because actual fixed cost could not be estimated, particularly in the manufacturing of new types of aircraft and equipment. Member companies of the East Coast Aircraft Council are Aviation Corporation, Bell Aircraft Corporation, Chance Vought Aircraft, Curtiss-Wright Corporation, the Eastern Aircraft Division of General Motors, Fairchild Engine and Airplane Corporation, The Glenn L. Martin Company and the Republic Aviation Corporation, and many of their subsidiaries.

More Expansion for Convair's Texas Factory

A new $2,238,999 facilities expansion program for Consolidated Vultee's Fort Worth division has been approved by the U. S. Engineers, F. C. Clayton, plant engineer, announced recently. The new program, which is in addition to a $2,478,148 facilities expansion program now under way, includes a 100,000 square foot warehouse, a 115-foot wide and 40 foot high vertical door for the assembly building, moving of a 25-foot door, addition of 11,000 feet of railroad track and switching and expansion of present yard and apron paving facilities.

GEORGIA-MADE B-29's are shown in final assembly by this first photo of Bell Aircraft Corporation production at Marietta, Ga.

Lt. Gen. Knudsen Takes Charge of Materiel and Air Service Commands in Preparation for Reconversion

Lieutenant General William S. Knudsen, wheel horse of earlier war production strides and former head of General Motors, took over direction on July 20 of operations of both Materiel and Air Service Commands of the Army Air Forces. His headquarters is at Dayton, Ohio.

The full meaning of Gen. Knudsen's new assignment was not immediately apparent, but observers believe it will prove to be concerned chiefly with cutbacks and reconversion of industry now engaged in AAF production. Among his first statements after taking over his new command, the General said auto factories should be turning out new cars eight months after victory. He also said war surpluses "won't be dumped into the ocean."

The Materiel and Air Service Commands are expected to remain separate entities, with headquarters units at Wright and Patterson Fields, respectively.

600,000-ft. Factory Not Enough for Jet Engines; Another Factory Used

Jet propulsion aircraft turbines are now being produced by General Electric's second largest wartime plant. Since the output of this plant of more than 600,000 square feet of floor space will not be sufficient to meet government requirements, its production will be supplemented by another large corporation, formerly engaged in manufacture of airplane engines.

Curtiss-Wright Sales Pass Billion Dollar Mark

Curtiss-Wright Corporation shipments of aircraft, engines and propellers during 1943 totaled $1,295,236,317, an increase of 68.1 per cent over 1942, G. W. Vaughan, president of the corporation, announced recently. Consolidated net income for 1943 after taxes and deduction for postwar reserves and before final renegotiation, if any, amounted to $12,883,347, approximately one per cent of sales. Wright Aeronautical Corporation shipments during 1943 totaled $579,228,172 as compared with $449,545,679 in 1942. Consolidated net income for Wright after deductions and taxes amounted to $3,599,866, a percentage of .621 of sales.

Price Schedule Fixed for Surplus Machine Tools

A new price policy for the disposal of Government surplus standard general-purpose machine tools, which is intended to put surplus machines back into production quickly and at the same time recover for the Government as much of its investment as possible, was recently announced by William L. Clayton, Surplus War Property Administrator. Under the schedule, tools not in the purchaser's plant are sold with an immediate depreciation of 15 per cent, less 2½ per cent per month for the first six months, 1 per cent per month for the next four months, and .8 per cent per month for the next twenty-six months. Tools sold to a purchaser or lessee who has the tools in its plant, will be five points higher than the other schedule, since the purchaser will not pay freight charges and also has knowledge of the condition of the tools. The depreciation price policy is based on the manufacturer's original price, f.o.b. builder's plant, and the price period is fixed from the date a machine was originally put in use to the date of contract termination.

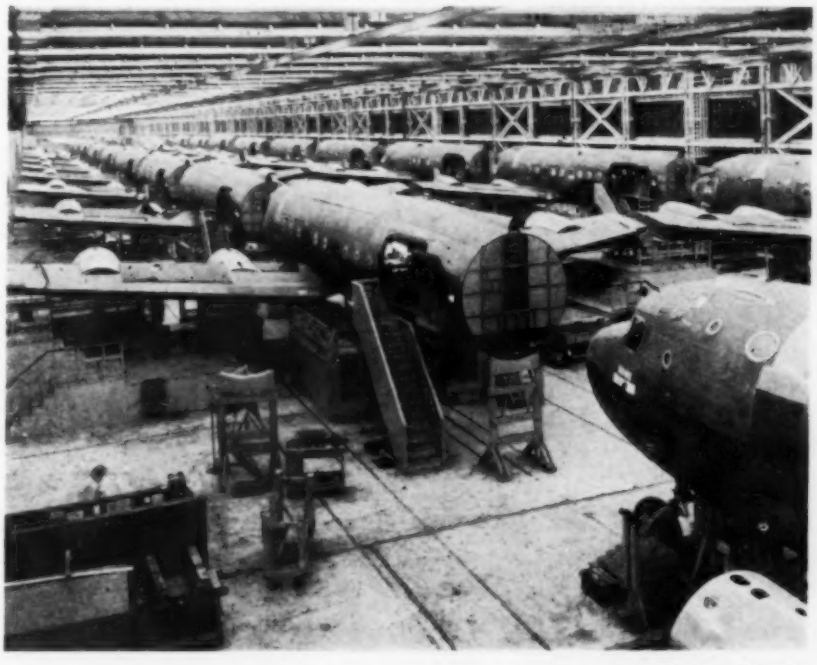
Hinckley Will Direct Contract Settlements

Welcome news to all war contractors and manufacturers, especially to the aviation group, was the appointment last month of Robert Henry Hinckley, former assistant secretary of commerce for air and "father" of the civilian pilot training program, as director of contract settlement. At the time of his appointment, Hinckley was vice president of the Sperry Corporation, having left the department of commerce in 1942.

Although actual negotiation of settlements will be carried on by the agencies that awarded the contracts, Hinckley will formulate basic policies concerning settlements and interim loans, administer the terms of the settlements and expedite payments to contractors. Hence contract termination machinery under Hinckley's direction should eliminate the reoccurrence of chaotic and ruinous conditions characterized by the government's handling of contract settlements following World War I.

His appointment, filling a post recommended in the Baruch-Hancock report, is being widely hailed throughout the aviation industry as a wise and timely move toward the orderly and speedy settlement of war contracts. The appointment is subject to Senate confirmation.

HINCKLEY



—(Douglas Photo.)

MASS PRODUCTION OF DC-4's for military cargo routes is clearly shown by this view of the Douglas Aircraft Company's Chicago production lines. The Illinois factory's June output was 15 per cent above schedule.

Industry Leaders Stress Need of Aviation Resources in Maintenance of Peace

Leading aircraft builders recently presented a plan for preserving peace after victory and aiding national prosperity through aviation to the War Contracts Subcommittee on Military Affairs of the U. S. Senate. Six points were stressed in the plan presented to the Murray Subcommittee: maintenance of large air force and strong aircraft manufacturing industry for adequate air power; orderly termination of contracts to handle industrial demobilization problem; disposal of surplus aircraft through central government agency; net income of aircraft companies of 1.8 per cent is lowest of any war industries and net assets are less than one month's operating costs at present production rates. Appearing before the Subcommittee were E. E. Wilson, vice chairman, United Aircraft Corp., and chairman of Aeronautical Chamber of Commerce; Harry Woodhead, president, Consolidated Vultee Aircraft Corp.; Joseph T. Geuting, Jr., vice president, General Aircraft Corp., and J. Carlton Ward, Jr., president, Fairchild Engine and Aircraft Corp.

Solar Delivers 200,000th Exhaust Manifold

Solar Aircraft Company recently commemorated completion of its 200,000th exhaust manifold for a world's record in production. Solar, pioneer manufacturer of custom-built exhaust manifolds for aircraft, began production fourteen years ago. Aircraft officials and military and civic leaders attended the production record ceremony.

Texas SAE Hears Widmer

R. H. Widmer, chief aerodynamicist for Consolidated Vultee's Fort Worth division, was to be the principal speaker at the August 18 meeting of the Texas Section of the Society of Automotive Engineers to be held in Dallas.

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Brazilian Firm Will Manufacture Continental Engines

Senor Jorge R. Fragoso, general manager of Compania Aeronautica Paulista, Sao Paulo, Brazil, a recent visitor at the Muskegon, Michigan, plant of Continental Motors Corporation, said the Brazilian company is beginning the manufacture of the A and C Series 4 and 6-cylinder Continental engines to range from sixty-five to 150 horsepower. These Brazilian-made Continental engines will be known as CAP-Continental engines. The Compania Paulista is now building three types of Brazilian-design planes: The CAP-4, 65 hp. two-seater; the CAP-1, 100 hp., low wing design with plastic wood fuselage and wings; and the CAP-3, 130-150 hp. primary trainer for the Brazilian Air Corps.

Burlington Plant to Make Parts for C-82

Plans to build component parts of the Fairchild Cargo C-82, all-metal ship, at the Fairchild Airplane & Engine Company's Burlington plant were recently announced by Lee H. Smith, plant manager. Completion of the plant's AT-21 program is being rushed in order to begin the training program for the new project. Deliveries of the C-82 are scheduled for the latter part of the year, Smith stated.

7,000 DC-3's in Military Service

World-wide distribution of 7,000 DC-3 type planes manufactured by Douglas Aircraft Company for the armed forces was revealed in Army and Navy reports recently. These ships comprise 69 per cent of the multi-engined planes operated by the Air Transport Command, Army Air Forces, and are flown in each of the ATC's eight foreign wings. Almost 100 per cent of the tactical planes of the Troop Carrier Command are built by Douglas and Douglas land-based carriers constitute over half of the transport aircraft, including land and seaplanes, operated by the Naval Air Transport Service.

P. & W. Adds Test Cells For "Big" Engine Output

Eight new production test cells, capable of handling engines up to 4,000 horsepower, are under construction at the East Hartford plant of Pratt & Whitney Aircraft Division, United Aircraft Corporation, William P. Gwinn, general manager, announced recently. The new construction will bring to seventy the total of production test cells at the plant, not including experimental cells, and are in preparation for the quantity production of one of the new model engines with increased horsepower. This new model will not require the maximum capacity of the test houses, Gwinn stated. Pratt & Whitney's changeover to larger engine production at the home plant was marked recently when the two final engines of 600 horsepower, single row "Wasp" model left the assembly line. The manufacture of the "Wasp" engine has been assigned to licensee plants to enable the East Hartford plant to devote its facilities to production of larger models.

Auxiliary Motor Has Unique Improvements

A new lightweight, 2-cylinder, 32-horsepower auxiliary engine, weighing only 5.1 pounds per horsepower, recently passed successfully exhaustive tests at the Tabor Manufacturing Co., Philadelphia. The new engine operates on the double-acting principle whereby power is applied to both sides of a piston instead of but one, accomplishing the work of four. Cooling problems for double-acting engines, it is claimed, have been eliminated by drawing off heat from inside the cylinders as well as outside through the conventional fins. Inside cooling is accomplished by drawing the carburetor air through the specially designed cylinders so that the faster the engine runs, the more cooling air is pulled through. The double-acting principle has allowed a saving of one-third in weight and a space saving of two cylinders.

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Northrop Points Way for Rehabilitation of Veterans by Operating Industrial Therapy Unit

An unusual industrial therapy program which trains and puts to work disabled Army veterans while still hospitalized is now being operated by Northrop Aircraft Company in co-operation with the U. S. Army Medical Department at Birmingham General Hospital, Van Nuys, Calif. A real production department, fully equipped with machines and tools for the making of parts for fighter planes, is located within the hospital itself. The parts on which the wounded soldiers work are not practice parts, but actual parts for the Northrop Black Widow, P-61 night fighter. Even bedridden patients work in bed, sorting, inspecting or assembling small parts. The hospital has facilities for over 2,200 patients, and the reconditioning program is open to all who desire it and show aptitude.

The men receive a short preliminary training course, generally one week of theory and handling of small tools. Others, because of inexperience or the nature of their injuries, require a longer training period. As soon as the soldiers go into production work, they are employed as civilian personnel and Northrop pays them standard plant rates. In order for the disabled workers to operate certain machines, Northrop has altered or rearranged the mechanical operations, in some cases changed the machine. Various forms of pedals have been invented to make it easy for a convalescent to work, and for those patients suffering from shock, soundproofing and rearrangement of the location of work has been provided. The department, which is under the direction of James L. McKinley, head of industrial training at Northrop, permits the men to work only three hours a day. Groups of the soldiers regularly visit the Northrop plant to see the installation of the parts they have made in the fighter planes. The program is designed to recondition men in the hospital for return to active military duty, but it also provides a skilled trade for those released from service.

Northrop, which now employs a number of discharged disabled veterans, believes the program has served as a laboratory to gather experience in how to handle disabled men and place them in correct jobs. Colonel Alvin C. Miller, Commanding Officer of the hospital, and Major Daniel R. Mishell, Chief of the hospital's Reconditioning Division, both of whom have co-operated in the industrial therapy plan, find the mental attitude of patients greatly improved as they gain confidence in knowing they are capable of doing many types of work, and are preparing themselves for a skilled occupation in civilian life.

Aircraft Instruments Improved

Improvements in aircraft-instrument design necessary to meet wartime service conditions were discussed by C. F. Savage, aircraft-instrument engineer, and J. M. Whittenton, electric-instrument engineer, both of General Electric Company, at the AIEE summer meeting in St. Louis. The use of 400-cycle a-c systems has influenced many new developments, such as remote-indicating compasses, gyroscopically stabilized azimuth indicators and the all-electric automatic pilot, the speakers stated. The functional ranges of many types of instruments have been affected by general improvement required in airplane performance, such as tachometers, air speed indicators, altitude indicators, manifold pressure, temperature range and flowmeter.

7000th B-24 Finished; Convair Lists Projects

The 5,000th Liberator B-24 bomber rolled off production lines of the San Diego division of Consolidated Vultee Aircraft Corp. on June 12, making a total of 7,000 Liberators that this corporation has turned out.

Consolidated Vultee has delivered 227,000,000 pounds—about 17 per cent—of the total airframes produced by the entire aircraft industry since December 7, 1941. It has employed an average of 76,000 people in that period.

A survey shows that at San Diego the Liberator B-24 and a transport version of it, and four other four-motored planes are in production; at Fort Worth, the Liberator and three other planes equally large or larger; at Vultee Field, major assemblies for P-38 Lightnings, and accessories for other Consolidated planes; at New Orleans, the PBY Catalina; at Nashville, Vengeance dive bombers and P-38's; at Allentown, the new TBY Sea Wolf torpedo bomber; at Wayne, Reliant navigational trainer and Sentinel liaison and ambulance plane; at Louisville, Tucson and Elizabeth City, modification centers; at Miami, major assemblies for the B-24, PBY, P-38, TBY and parts for Corsair fighters.

The Vultee Field plant at Downey, Calif., produced its 11,537th BT-13 basic trainer on June 2.

Adel in Baltimore

J. H. Bourdon has been appointed manager of Adel Precision Products Corporation's new engineering service office in Baltimore, which will handle customer service on Adel line support clips and blocks, manufactured for Eastern users in the company's plant at Huntington, W. Va. Adel hydraulic customers will still be serviced from the Hagerstown, Md., office. Bourdon, prior to joining Adel, was procurement supervisor for the Glenn L. Martin Company in six states.

Larger Quarters for Firm

The Aircraft Products Company, manufacturers of precision fittings and special bolts, has moved to larger Dallas quarters to handle the increase of business, it was announced by J. Campbell and A. Strangi, owners. The new location is 2122-24 Jackson St., Dallas.

New Mec-Rad Building

The Mec-Rad Division of Black Industries, Cleveland, has begun construction of a new building adjacent to the present Cleveland plant for the manufacture of mechanical and electrical components for radionics. The new building, which is scheduled for occupancy in September, will contain an enlarged laboratory, testing and research facilities in addition to doubling production capacity.

Aero Tool in Dallas

The Aero Tool Company of Burbank, manufacturer of cup-forged aviation tools, has opened district offices at Dallas, in order to serve the South and Southwest aviation market with greater efficiency, according to Lester Deutsch, president. Deutsch is co-owner of the Deutsch Company, manufacturers of automatic screw machine and turret lathe products, formerly known as American Screw Products, Los Angeles. Jim Steves is in charge of Aero Tool's new Dallas office.

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George J. Newman Named Globe Vice President

John Kennedy, president and general manager of Globe Aircraft Corporation at Fort Worth, announced last month appointment of George J. Newman, former manager of the Fort Worth division of Consolidated Vultee Aircraft Corporation, as vice president of Globe in charge of production. Newman, who is only thirty-six years old, but whose twenty years of aircraft industrial experience includes piloting of every type of land and seaplane ever built by Consolidated since 1923, resigned his Convair post in May after returning from a special mission which took him around the world.

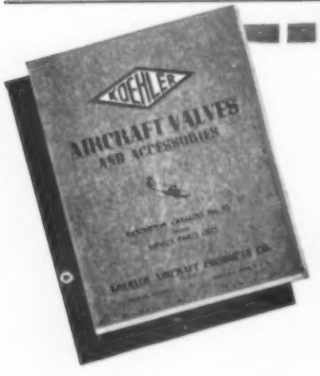
Kennedy said Newman's appointment is one of several steps contemplated by extensive plans for postwar operations. Globe has completed AAF contracts for twin-engine AT-10 trainers and is well advanced on several other projects including production of the nose section for the Curtiss C-46 transport.

PERSONALS

G. M. WILLIAMS, a director and senior vice president of Curtiss-Wright Corporation, has assumed the additional duties of executive vice president of Wright Aeronautical Corporation, following the resignation of M. B. GORDON as vice president and general manager. P. B. TAYLOR, vice president and assistant general manager of the Wright Company, has been named acting general manager. . . . A. C. MICHAELS, formerly superintendent of Plant D, Navy Corsair fighter division of Goodyear Aircraft Corporation, Akron, has been transferred to the Arizona division of Goodyear as plant manager. V. L. FOLLO, who joined Goodyear in 1919 and was superintendent of the Goodyear plant at Norrkoping, Sweden, prior to the war, was promoted from assistant superintendent of the Akron Plant D to superintendent. . . . JAMES L. KINNEY, formerly superintendent of Safety Regulations of the Fourth Region, CAA, Fort Worth, has been appointed Chief of the Air Carrier Division in Washington, succeeding the late W. T. MILLER. Kinney, a veteran pilot, joined CAA in 1927 as aircraft and engine inspector and has served the CAA in various positions. . . . JOHN PAUL RIDDLE, president of the Embry-Riddle School of Aviation, has announced the sale of his entire interests in the civilian aviation school to JOHN G. McKAY, Miami attorney, and his associates. Riddle will continue his interests in the Technical School of Aviation, operated for the Brazilian Air Ministry at Sao Paulo, Brazil, and other foreign business. . . . JACK FROST, formerly public relations director of the Hecht Company in Washington, has been appointed assistant to the manager of the National Aeronautic Association. . . . HARRY W. GRAY, assistant to the general sales manager of the Airtemp Division of Chrysler Corporation, has joined Manning, Maxwell & Moore, Inc., industrial specialists of Bridgeport, Conn., as instrument sales engineer. . . . H. W. CLOUGH, vice president of the Belden Manufacturing Company, Chicago, has been appointed a vice chairman of the newly-formed Aircraft Electrical Council, composed of fifty member companies of the National Electrical Manufacturers Association. . . . J. EARL STEINHAUER, formerly assistant manager in charge of operations of the Washington National Airport and active in the management of the annual National Air Races since 1932, has been appointed manager of the general service department at Fairchild Aircraft Division, Hagerstown, Md., succeeding WILLIAM HAMBY, who has been assigned to a staff position on Fairchild development activities. . . . R. C. AKIN has been appointed sales manager of the Midwest Division of Littelfuse, Inc., of Chicago and El Monte, Calif. Akin formerly was national sales manager of the cellulose tubing division of Sylvania Industrial Corporation, and prior to that position, was assistant director of sales with John Morrell & Company. . . . B. F. McNAMEE, formerly in charge of the engineering department of Consolidated Engineering Corp., Pasadena, has joined Littelfuse, Inc., as head of research on electronic products and applications. Previously, McNamee was connected with Wagner Electric Company, The Echophone Company and Colin B. Kennedy Corp. in radio. He holds patents on electrical measurement improvements and electrical production of music.

James V. Griffin

Funeral services were conducted July 15 at Burbank, California, for James V. Griffin, former director of public relations for Lockheed Aircraft Corporation, and one of the aviation industry's outstanding publicists. He was twenty-nine. As a graduate of Loyola University in 1935, he authored a thesis on international relations which has since been incorporated in the University's curriculum. Illness forced his retirement from the Lockheed post two years ago, but he had continued as an active member of the public relations department until his death. Among the pallbearers were many prominent aviation executives and writers who had been friends and admirers during his brilliant career.



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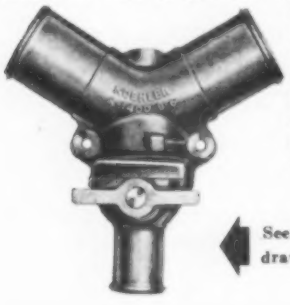

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AIR TRANSPORT

Domestic Airlines

The Air Transport Association estimates that the first half of this year will show 588 million passenger-miles for the domestic airlines—up 20% over 1943's first half. Also 41½ billion mail pound-miles, up 30%. Express up 7% to 15 billion pound-miles.

Braniff Airways has occupied a new $17,500 annex that adds about 10% to the maintenance space at the Dallas base. The new building will house welding shop, heat treat, sand blast, small parts repair, and storage space. . . . Return of two DC-3s to Chicago and Southern restores their services to pre-war levels. A third round trip between Memphis and New Orleans, a second trip between Chicago and Houston, and a sixth trip from Memphis to Chicago all will result. . . . First two of several Lodestars expected to be returned to National Airlines will be used to inaugurate their new Florida to New York route as soon as conversion of the planes is completed. . . . Delta Air Lines reports an exceptionally high load factor for June with 94.3% of all seats occupied at all times. This is only slightly better than their six months average of 91.33%. An additional DC-3 received early this year has permitted 34% increase in passengers carried, 54% in mail, and 57% in express.

Feeder Air Lines

The CAB in its opinion on the local-feeder-pickup investigation has taken a conservative stand. Certificates may be issued on a temporary or trial basis, and only where conditions indicate success at reasonable cost to the government. The Board rejected the 25c-a-mile limit on mail pay recommended by the examiners. The Board suggested that applications not requesting temporary authorization be amended to do so. Helicopter service decisions will be held until equipment for such operation is available. The Board warned that feeder service would be competing with the most highly developed rail and highway systems in the world.

Los Angeles C. of C. has recommended to the CAB that consideration be given to feeder and pick-up service to 100 Southern California and forty-three central California cities and towns. Recommended also was issuance of temporary certificates for an experimental period. . . . Hart Bowman, Director of Aviation for Dallas, reports that twenty-seven airlines, mostly feeder lines, have applications pending for service into Dallas. In addition, Bowman has a drawer full of letters from prospective airline operators who have not as yet filed applications before the CAB.

Cargo

Edward S. Evans Transportation Research in collaboration with U. S. Departments of Agriculture and Commerce is studying the reciprocal air-movement of perishables and manufactured goods to evaluate the possibilities of such hauling on a non-scheduled, contract-type basis. In line with the current study is the east-bound movement by air of perishables such as lettuce with return haul of manufactured goods out of Detroit. Col. L. H. Brittin, founder of Northwest Airlines, has been named to head the Evans Transportation Research, with headquarters in Washington. . . . American Airlines has christened "Skyfreighter", their new transcontinental all-express Flagship. The first of these planes is claimed to have the greatest useful load of any domestic plane, 8,826 pounds. Use of the plane as a freight carrier differs from previous similar operations only in that the load will be limited to express and no mail.

PERSONALS

American Airlines announces new vice presidential appointments. In Dallas it will be DOC MILLER heading the Southern Region in traffic and development. WILLIS LIPSCOMB moves up from General Traffic Manager to assistant vice president-traffic. BILL MILLER, former operations manager, becomes assistant vice president-operations. AL BONE, LEW KING and BILL BUMP join Doc Miller as regional vice presidents for the West Coast, Chicago, and Boston, respectively.

OSWALD RYAN, CAB member has returned from Europe via Clipper.

B. T. CLINE, assistant general traffic manager of Chicago and Southern, resumes his old position as traffic manager at St. Louis and will continue to handle special assignments for Memphis. He succeeds JAMES W. SKINNER, who takes over the district office at Shreveport, formerly handled out of Houston by J. J. SHAD. L. D. PEPPER will handle operations at the new Greenwood, Miss., station.

GENERAL ALFREDO LEZAMA ALVAREZ and SENORA LEZAMA recently visited MR. AND MRS. TOM BRANIFF in Dallas. The General was head of the Mexican army aviation school Cinco de Mayo in Pueblo until appointed to head Mexican civil aviation, succeeding GENERAL SALINAS CARRANZA.

LT. COL. ROBERT F. SIX has returned to the Presidency of Continental Air Lines after being on leave to the Air Forces since September, 1942. During his tour of duty with the Air Transport Command, Six headed a flight of Liberator bombers on delivery to Australia, and served as commanding officer of a transport squadron in the South Pacific. He returns to the airline in time to join in the celebration of the company's tenth anniversary on July 16. Ten years ago under the name of Varney Speed Lines the company inaugurated service between El Paso and Pueblo.

Latin America Strides in Air Transport Travel

Office of the Co-ordinator of Inter-American Affairs has released certain progress reports on Latin American air transport. Civil Airports in Latin America should reach 2,100 by the end of this year, compared to 3,129 in the U. S. Ton-miles of traffic to and from Latin America has increased more than 200% since 1940. Passenger traffic throughout that territory is 76% of the total, the exact equivalent of U. S. domestic passenger proportion. However, the U. S. ratio of 17% mail and 7% cargo reverses in Latin America to become 16% cargo and 8% mail. Cargo accounted for 60% of total ton-miles in Central America, 44% in Bolivia, 33% in Colombia, and 28% in Peru.

Local traffic was about equally divided between South America and Middle America. Mexico and Brazil accounted for over half of the total local traffic in 1943. Route-miles in Latin America triple the U. S. domestic mileage, but the frequency of schedule is only about one-sixth as high as the U. S.

Average passenger fares for all of Latin America are some 40% above those of the U. S., although decreasing since 1940. Variation between individual countries is marked, ranging from 3.8 cents per passenger-mile in Peru to 16 cents in Venezuela. Cargo tariffs average 84.6 cents per ton-mile.

Utilization of transport aircraft is still low, although improving. At present it is only three hours per day as compared to 9.6 in the U. S. This is explained by low frequency of service, lack of night flying, inadequate maintenance facilities and advanced age of some of the planes. There were 386 planes in operation in Latin America in 1943, of which 246 were multi-engined, 57 were U. S. flag operated, but only 97 were of types manufactured since 1936.

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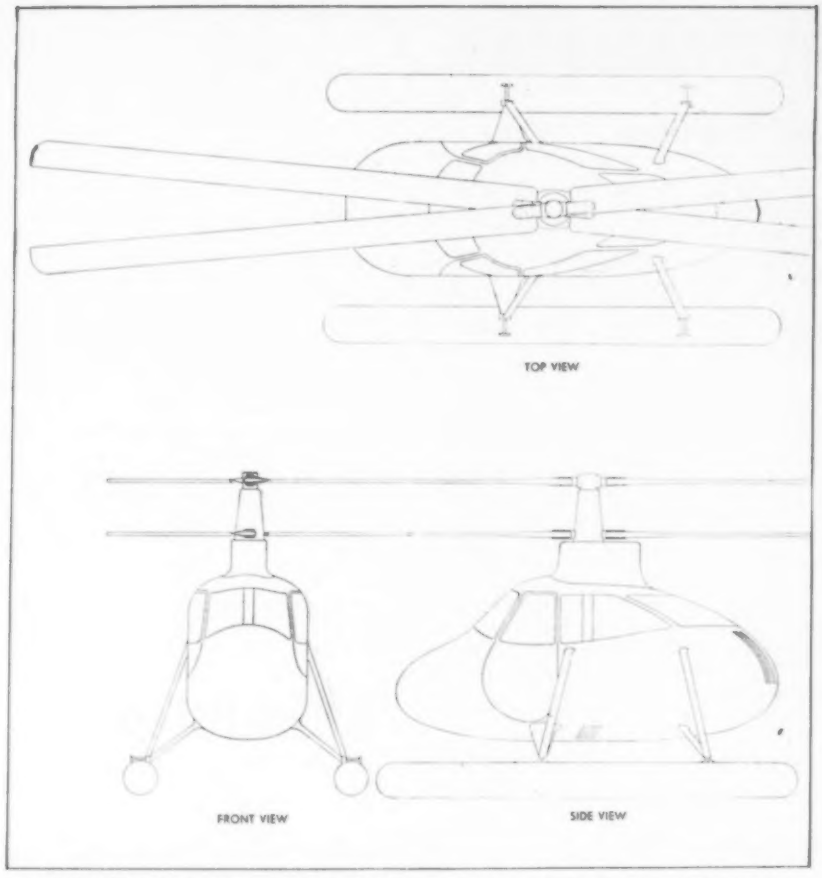
CAA Plans 5-Year U. S.-State Project for 3,000 Airports Costing Billion

A billion dollar, five-year program for building 3,000 new airports, in which the States and the Government would share the costs, has been prepared by the Civil Aeronautics Administration for presentation to Congress. Assistant Secretary of Commerce William A. M. Burden, declaring the plan ideal for a measure now pending which would appropriate for the CAA $100,000,000 annually for the next ten years and to be used in matching State funds for airport work, said all but 100 of the new fields would be small ones intended mostly for private flying. Of the total, $630,000,000 would go to 1,827 airports deemed adequate for commercial air operations such as local or feeder service to transcontinental express service. At present there are only 286 cities certified as airline stops, and improvements to meet safety and efficiency standards are needed at 174 of them.

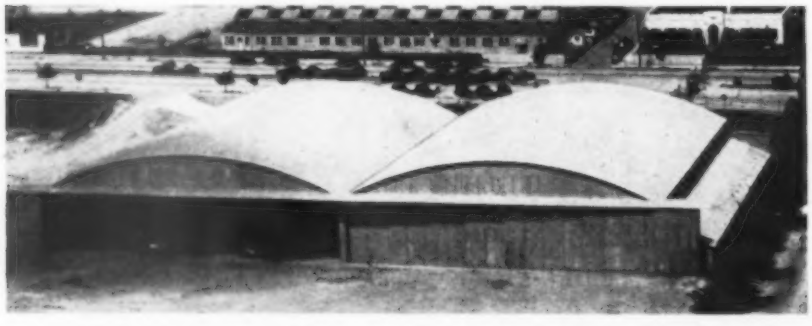
"Airparks" Made Official Name for Airports in Class I Category

"Airparks" is the new name to be applied to Class I landing fields as a result of action of the National Aeronautic Association Joint Airport Users' Conference in Washington in late July. John E. Sommers, acting Civil Aeronautics Administrator, announced that the CAA would officially use the new term. Airports under this classification will have two runways approximately 2,000 feet long for use by private aircraft. The name was originally suggested by Robert Hinckley.

The Conference will become a permanent establishment made up of organizations interested in airport expansion, co-ordination, and construction. An educational campaign will be started soon to acquaint the general public with the benefits to be gained from local airport development.



TAILLESS HELICOPTER BY BENDIX Helicopter, Inc., is shown for the first time in these drawings released by Vincent Bendix. Two counter-rotating rotor-wing assemblies, each with a pair of variable pitch rotor wings which automatically eliminate all torque effects, eliminate need of a rear anti-torque control propeller. Attached to the under side of the rotor wings are "propulsive blades, which can be so operated as to give flight in any desired direction," said Bendix. Called the "Model G," its specifications include: Capacity for two passengers and baggage; 120 mph. maximum speed; 100 mph. cruising speed on 75 per cent of power; 480-feet-per-minute vertical climb; 165-hp. engine (not described); 300 rpm. rotor speed; 32-ft. rotor diameter, and 626-pound useful load. Bendix Helicopters, Inc., is not connected with Bendix Aviation Corporation.



ATLANTA MUNICIPAL AIRPORT'S newest facility is this $100,000 hangar recently completed and dedicated by Southern Airways, Inc. The new structure is 240 feet by 160 feet and has more than 38,000 square feet of storage space. According to Frank Hulse, president of Southern Airways, the new hangar was occupied August 1 and houses the main offices of his company, which has additional operating units at Birmingham and Decatur, Alabama, and Anderson, Camden and Greenville, South Carolina.

110,000 Pilots Per Year Trained for Army

Training of pilots for the Army Air Forces has reached the 110,000 per year mark, Lt. General Barton K. Yount, commander of the AAF Training Command, stated in a letter to Captain Max Balfour, director of the Spartan School of Aeronautics in Tulsa. The expansion of the training program from 400 to 500 pilots a year to 110,000 per year would not have been possible without the civilian contractors, General Yount stated.

AAF Mishaps Reduced

A 29 per cent reduction in accidents of all types in Army Air Forces operations in the United States was reported last month by the War Department for the first five months of 1944 in comparison with the same period last year. Fatalities were 35 per cent lower, and training accidents dropped 25.5 per cent.

Airlines Name Counsel

Alexander Royce, who figured prominently in the de-Germanization of Latin American airlines in 1941-42 and who is on leave from Government service, has been named by the seventeen domestic airlines bidding for international services to direct their campaign as counsel.

9,000 Cadets Slated for AAF Camp Courses

The Civil Air Patrol League is conducting a campaign to increase its membership in order to provide $67,000 to send 9,000 CAP cadets to camp at AAF bases this summer. The cadets spend ten days at some AAF base, working and studying with the Air Force crews, pilots and instructors. They receive training and experience in plane maintenance, drill, radio communication, weather observation, physical training and pre-flight instruction. The AAF houses the cadets at the bases and flying fields, but subsistence is furnished by the CAP. Details for the handling of the CAP cadets, who will go to the camps under the direction of CAP instructors, are worked out by CAP Headquarters, the forty-eight CAP Wing Commanders and the AAF training liaison officers.

400 Participants in Arkansas Mobilization

The Arkansas CAP recently held a week's bivouac, attended by over 400 members, near Little Rock. Two trailers were loaned by the Little Rock Squadron, one serving as headquarters, and the other furnished with a photographic darkroom. About 100 tents were set up in addition to three large ones, two of which were mess kitchens and one a canteen. With the exception of one day when the public was invited, the meeting was closed to everyone but CAP and CAPC members. The program included message pick-up, dropping of messages and parcels, simulated bombings, spot landing contests, scheduled classes and lectures and drill. The tents, bedding and mess equipment were furnished by the Army, and two mess sergeants were loaned to oversee the kitchen, with CAP members doing the actual work. Military courtesy and discipline were maintained at all times and strict adherence to uniforms and rules of army camps.

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THANKLESS JOB

(An Editorial)

THE recent settlement of difficulties between the Civil Air Patrol and the CAP League (SOUTHERN FLIGHT, July, 1944, p. 66) paves the way for more effective service to the Army Air Forces, especially in aviation cadet recruiting and pre-flight training. The forty-eight Wing Commanders of Civil Air Patrol and the public-spirited leaders backing the League deserve congratulations for ironing out their points of disagreement in order to launch a program of co-operative effort.

With veteran Civil Air Patrol Wing Commanders now taking an active part in the direction of League policy and activities, the all-important aviation cadet program will derive immediate benefit in two respects. First, money will be available for the cadet program. Lack of funds has always been a major obstacle in CAP operations, the only source heretofore being from the individual members' pocketbooks. The drain since Pearl Harbor has been considerable and it's high time a new source was uncovered. Second, Civil Air Patrol through League promotional efforts will receive the assistance of thousands of civic leaders in hundreds of communities where cadet programs have been nonexistent or curtailed by lack of volunteer leadership.

Civil Air Patrol is one of the very few thankless jobs still vitally necessary for the successful prosecution of the war. Most of the civilian defense organizations vanished with the improvement in war news from abroad. Insofar as the general public is concerned the war is practically in the bag. Not so with the CAP, whose old-timers in aviation well remember a few years ago and figure they still have a major job to perform—the recruiting and training of a quarter of million future Army airmen. It's mighty encouraging to see them get on with the job without further delay. ★ ★ ★

Big Reserve of Cadet Eligibles Built by CAP

Since the AAF has reopened the Air Corps Enlisted Reserve to new applicants, it can be revealed that units of Civil Air Patrol throughout the country have created a big reserve of eligibles by conducting mental screening tests of seventeen-year-old boys in the high schools.

When enlistments were temporarily stopped in mid-March, CAP officials went to Washington and urged that they be given authority to carry on the screening work which already had been conducted extensively by the patrol. If this had not been done, the eligible boys would not have been reached before the end of the school term. After that, they would have been scattered for the summer.

So the AAF agreed and the Adjutant General gave the job of mental screening, in advance of actual enlistments, exclusively to CAP. As a result, tens of thousands of young men have passed their mental tests. Afterwards, they need only pass their physical, and be personally quizzed by AAF Examining Boards, to qualify for the Air Corps Enlisted Reserve, for call to active duty as Air Corps trainees after they reach eighteen. Meanwhile they can train in the CAP Cadets or in the special college training program now open to seventeen-year-old Reservists.

Oklahoma Air Shows Spur Cadet Activities

Members of the Oklahoma CAP have conducted Sunday air shows at Enid, Oklahoma City, Tulsa, Duncan, Okmulgee, Blackwell, Weatherford and Hugo, with many prospective cadets given orientation rides. In Tulsa, the CAP served lunch to the visiting members. Wing Headquarters of the Oklahoma CAP have made arrangements for CAPC boys to visit army air bases within the state for two-week periods before September 1. Each group of twenty-five boys, selected by merit through the squadrons, is placed in charge of a CAP officer.

Denver Host to Col. Johnson

The Denver CAP recently entertained Colonel Earle L. Johnson, National CAP Commander, and Lt. Col. George A. Stone, Ohio CAP Wing Commander, at a conference of all officers of the Colorado Wing. Colonel Johnson addressed the group, following a dinner, on the future of the Air Forces and the Civil Air Patrol's part in training CAP Cadets so they would not be rejected when they applied for AAF training. Present at the dinner and conference were Capt. R. L. Jackson, Pueblo Group 2, Capt. W. Walker, 3rd Group, Colorado Springs, and Edward D. Nicholson, United Air Lines, and Harry Anhold, president of the Denver Chapter of NAA. Nicholson and Anhold are both members of the CAP League.

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By TONY HAGMANN

The blue plate special for August is Mustang and Love Field, in Big D.

Mustang is run by N. T. Womack, "Toots" Womack's brother, who is keeping the seat warm while Toots takes care of a full quota of slanteyes in the S. Pacific. Mustang gets lots of transient business from oil companies, cotton growers and ranchers, like Micky Coyle. Micky used to pitch ball way back when, but now he is ranching right near Hugo, Oklahoma. He flies a Skyfarer and remarked: "I bought it because the only way I could get hurt was to fall out of the darned thing."

Then there is Jake Yost from way out in West Texas, a place called Sanderson. He gave a blanket invitation to everybody to come out and see him, then said: "Airport? Sure, and it is so rough even the buzzards hesitate to land." Others like Blackie Clark, Haliburton; Charlie Scholes, Humble; Julian Freeman, Shell; Mrs. Jimmie Kolp, Electra, Texas, use this field for their Port of Call when business demands their presence in the "silk stocking city".

Mustang ain't asleep on instruction either. Dee Bishop and Al Goodpaster instruct and you can get any size ground course that will fit you. You must be sure to meet Hazel Henson, whom some snide characters call "Down Wind Hazel". We overheard her give out with a smart sales talk to Sgt. L. A. Little, Fifth Ferry Group, on an item to "slick up your Luscombe" . . . she closed the deal, too.

Stationed here is the CAP base in charge of Capt. Strong. They have a large group of buildings and are training a full stack of "under eighteen'ers" in the rudiments of flying. For the legal age'rs there is a Link complete with airconditioning . . . and other interesting equipment.

For dessert we offer one Charter Service (essential travel) owned and operated by "Doc" Watson. Doc holds a royal flush in aviation background and hangars here. Main offices at Love Field.

Love Field is the home of Dallas Aviation School, Southwest Airmotive, Lockheed Modification, Braniff, CAA, Air Transportation Service (the charter deal), Fifth Ferry Command (ATC) and the name, Love, seems to be catching.

We fell in love with a Grumman Amphibian which was getting two new engines at Southwest. It is flown by Chuck Hanna, a wizard on water landings, and co-pilot Louis Trosclair, master of engines. (Louis once worked on Amelia Earhart's plane.) They call it a "duck" . . . and after two landings and take-offs at Lake Dallas we think they could have done much better. No duck could bring that much pleasure.

Back to the orange blossom blooming, Ed. Hathaway, Air Higgins, Dick Kiefer, all of Pratt and Whitney, and Harry Shuhart of Lockheed, put stars in the eyes of some local peach blossoms and rings on their fingers. Making our society page complete . . . so 'Bye now. . . .

Kansas City, Missouri, via Marion Melcher . . . After I'd written about the paved run-

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ways, and that our auxiliary airport has lighting, including beacons, marker lights, a lighted wind cone and obstruction lights, I thought it high time to whizz out to Grandview Airport and have a look-see. I did, and was much impressed with the fine job that has been done. To date we do not have a control tower there (the Army is using the field for the training of ferry pilots). A control tower will be added when Kansas City begins to use the airport permanently—"after the duration", I suppose.

The Ad Club chose Thomas H. Beck as speaker this month, and Lou Holland—the father of aviation in Kansas City—had a dinner in Mr. Beck's honor that evening. He recently became president of the "Air Youth of America".

College students are spending their vacations learning to fly at Municipal Airport—and though he's not on vacation, so is L. P. Cookingham, our City Manager. Mr. Cookingham piloted a plane years ago and is renewing his air activities.

The CAA now controls the traffic tower at Municipal Air Terminal. . . . Chuck Daily, former Airport Manager, is now a lieutenant colonel with the A. T. C. of the A. A. F. Recently he mailed a card from London—ten days later a note from Morocco and a few days later a postal from Alaska!

Pratt & Whitney had family day over the July 4th holiday. Many citizens looked with awe upon the giant engines constructed at this No. 1 aviation plant. . . . "Sox" of the Star is back from the Aleutians, reporting!

Two members of the Kansas City Unit of the Women's National Aeronautical Association have been appointed National Governors: Mrs. Mickie Scott for Colorado; Mrs. Ella Sittler for St. Louis, Missouri, and Southern Missouri. Both members have retained their affiliation with the Kansas City Unit, though they have left K. C. . . . Among the guests at the Annual Picnic meeting of the WNAA held in Swope Park in July were the President of the Topeka Unit, Mrs. Huscher, and another member, Mrs. Rita Carlin.

Work Resumed on Forty-one Necessary Airports

Resumption of construction of forty-one airports was announced by Secretary of Commerce Jesse H. Jones last month after the CAA, Army and Navy had resurveyed the National Defense Landing Area Program projects. Fourteen of the projects were reported as being required for specific military purposes. These are at Evergreen, Ala.; Winslow, Ariz.; Oakland, Cal.; Pensacola, Fla.; Gainesville, Ga.; Trenton, N. J.; Pauls Valley, Okla.; Port Orford, Ore.; Kingstree, S. C.; Knoxville, Tenn.; Buffalo, N. Y.; Champaign, Ill.; Niagara Falls, N. Y., and Sheridan, Wyo. Twenty-seven were classified as necessary for emergency use. These are at Alturas, Cal.; Winter Haven, Fla.; Decatur, Ill.; Quincy, Ill.; Springfield, Ill; Dubuque, Iowa; Waterloo, Iowa; Lawrence, Mass.; Pellston, Mich.; Bemidji, Minn.; Duluth, Minn.; Springfield, Mo.; Dansville, N. Y.; Greensboro, N. C.; Jamestown, N. D.; Canton, Ohio; Mansfield, Ohio; Springfield, Ohio; Wilkes Barre, Pa.; Denton, Texas; Georgetown, Texas; Danville, Va.; Martinsburg, W. Va.; Parkersburg, W. Va.; Wheeling W. Va.; Wiley Ford, W. Va.; and LaCrosse, Wis.

WPB Order P-47 Amended

Preference Rating Order P-47 covering the maintenance, repair and operating supplies and equipment order used for necessary civilian aircraft, has been revised effective July 1, and will now apply to only three types of aircraft operators: (1) scheduled airlines; (2) foreign airlines; and (3) aircraft owners and operators in Alaska.

All other civilian aircraft operators must acquire material by the use of Controlled Material Plan Regulations Nos. 5 or 5A.

Birmingham Club Elects

New officers elected by the Birmingham Aero Club are Holland Cox, president; Troy Arnold, first vice president; Brown Hill, second vice president; James Mills, third vice president; George Cowden, treasurer, and Edith Wideman, recording secretary.

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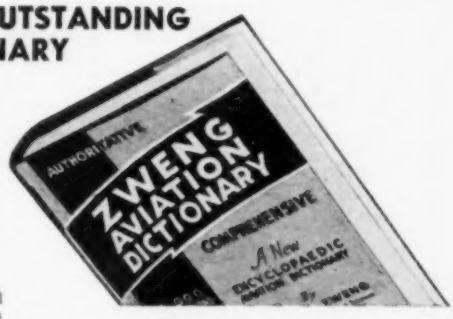
Altitude difference
Landing run
Barotropic state

DO YOU KNOW . . .
1. Who made the first Atlantic Crossing?
2. Who made the first round-the-world flight?
3. Who made the first glider flight?
4. Who flew the first air express?



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8. What important act by Billy Mitchell changed our military defense plans?

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Kincaid Manages National Airport

Robert L. Kincaid, formerly assistant to the Chief of the Airway Traffic Control Branch of CAA, has been appointed assistant manager in charge of operations of the Washington National Airport, succeeding Earl Steinhauer, who has joined the Fairchild Corporation. Kincaid, who joined the CAA in 1937 as assistant airport engineer in New York State, was previously airport manager of the Syracuse Airport.

New Radio for Aircraft

Improved aircraft radios of very high frequency, capable of eliminating much natural static or "atmospherics," are being produced by Bendix Aviation Corporation for warplanes. Like television, they have comparatively short range following the line of sight and stopping at the horizon. Because of this, a number of planes on scattered fronts can use the same frequency channel without interference.

900 Hours Before Overhaul

Many of the engines made by the Ranger Aircraft Engines Division of the Fairchild Engine and Airplane Corporation are giving 900 hours of operational service before overhaul.

A check of the Texas-Oklahoma area of 254 engines overhauled showed that the Ranger "6" engine had 23.8 per cent more service than the 600 hours expected of it before overhaul; 35.4 per cent reached the 900-hour mark, which is the limit the engines are permitted to operate by the Army Air Forces, and 85.1 per cent reached the 600-hour mark. The average number of hours of the 254 engines checked was 742.80.

20,000 Small Fields Asked

Joseph T. Geuting, chairman of the Personal Aircraft Council of the Aeronautical Chamber of Commerce, has announced formulation of a four-year plan for building 20,000 landing areas for personal plane owners. The fields would be airparks, costing $10,000 up, and "flightstops," described as runways built adjacent to highways at a cost from $6,000 to $10,000. State and county highway departments would develop and maintain the "flightstops."

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